

# **Initial Study/Environmental Assessment**

## **Huston Creek WWTP Dewatering Building and Primary Clarifier Project Crestline Sanitation District**

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Prepared for:

**Crestline Sanitation District**  
24516 Lake Drive / PO Box 3395  
Crestline, California 92325-3395

Prepared by:

Jericho Systems, Inc.  
47 N. 1st Street, Suite 1  
Redlands, CA 92373

September 2019

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## 1 INTRODUCTION

The Crestline Sanitation District (CSD) is proposing to upgrade its existing wastewater treatment plant by adding a primary clarifier, backup generator, trickling filter recirculation pumps, and a sludge dewatering building with associated sludge dewatering and conveyance equipment (proposed Project). Construction is estimated to occur in approximately 2020 and last approximately 24 months. The existing facilities in the proposed project area were constructed in 1952 (e.g. primary clarifiers) and 1984 (e.g. sludge handling facility). These facilities are reaching the end of their serviceable life, and are not designed to meet current engineering standards and community wastewater treatment demands.

The new primary clarifier is proposed to be approximately 38 feet in diameter and approximately 15 feet deep. This will provide redundancy for the two existing clarifiers which are each approximately 26 feet in diameter and approximately 8 feet deep. The new primary clarifier will act as the primary wastewater clarifier, designed to process the existing capacity of the two existing clarifiers, and the existing clarifiers will serve as redundancy. Each of the two existing clarifiers have a design capacity of 0.35 MGD, and the new clarifier will have a design capacity of 0.7 MGD.

The new dewatering building will be a two-story building. It is estimated to be approximately 34 feet wide by 51 feet long by 30 feet tall. An approximately 23 foot square by 15 foot high reinforced concrete thickened sludge holding tank with mixing system will be constructed adjacent to the new dewatering building. Equipment in the building will include:

- Two (2) thickened sludge pumps,
- Polymer storage and dosing system,
- Two (2) dewatering screw presses with motors,
- Dewatered cake conveyor system consisting of approximately three (3) conveyors, and
- Two (2) filtrate pumps.

The existing plant sits on a knoll of a slope, and the developed area encompasses approximately 3 acres, surrounded by a fence. The Proposed work will primarily occur within the fenced, developed area of the existing facility. However, some minor modifications to the adjacent property outside the existing fence line may be needed to accommodate some of the proposed improvements.

Site work includes constructing the new dewatering building within the existing grassy area adjacent to the existing dewatering building on the northwest side, constructing the new clarifier adjacent to the two existing clarifiers, and associated underground pipelines. Additional site work may include filling a small portion of the existing slope on the southeast side, adjacent to the driveway nearest the existing clarifiers, in order to slightly widen the existing driveway to accommodate placement of the new clarifier.

## 2 PROJECT LOCATION AND SETTING

The proposed Project is located in the unincorporated San Bernardino County mountain community of Crestline. Improvements will occur within the grounds of the existing Huston Creek Wastewater Treatment Plant (WWTP), which is situated approximately 2,700 feet north of the Crestline Sanitation office, located at 24516 Lake Drive, Crestline, CA 92325 (Figure 1 and 2). The Project site can be found on *Silverwood Lake* USGS 7.5' quadrangle, Township 2 North, Range 4 West, Section 14 at approximately latitude 34.25424, longitude -117.27056. There is no commercial or residential development adjacent to the project. The closest residences are approximately 1,000 feet to the southwest along Zermatt Drive, and approximately 1,700 feet to the east at the end of Orchard Road.

Due to the natural elevation changes throughout the Crestline community, the existing Huston Creek WWTP is at a lower elevation than the adjacent surrounding community. However, the Huston Creek WWTP is difficult to view from the adjacent surrounding community due to the tall trees surrounding the plant. The plant can be viewed primarily from areas of the community east of the plant that are higher in elevation.

### 3 BACKGROUND

The CSD was formed on January 16, 1947 to provide sewer services to the Lake Gregory area of the San Bernardino Mountains. The District was managed by the San Bernardino County Special Districts until voters elected to move the CSD toward an independently run district in 2008, which ultimately led to formation of the District's first independent Board of Directors in October 2010, which currently governs the CSD.

The CSD collects, treats and disposes of approximately 187 MG per year of domestic wastewater from the sewered areas of Crestline, Lake Gregory, Valley of Enchantment, and the Silverwood Lake recreational areas, all located in unincorporated areas of San Bernardino County (Figure 3). The CSD serves a population of approximately 10,000, with approximately 4,700 sewer connections.

The District's existing wastewater collection system for the Crestline Community is comprised of approximately 73 miles of gravity sewer pipelines with pipe diameters ranging from 6- to 15-inches. The CSD's collection system is subdivided into eleven Assessment Districts (AD). All assessment districts flow into Huston Creek WWTP, except for AD-5, which flows into Seeley Creek WWTP.

Sewage is discharged to one of two treatment plants via separate collection systems:

- Huston Creek Wastewater Treatment Plant (Huston Creek WWTP), located approximately 2,700 feet north of the CSD's office, has a design capacity of 0.7 MGD and processes an average flow of 0.35 MGD. This plant, constructed in approximately 1952 is CSD's primary plant, providing for providing service for 75 percent of the sewered area.
- Seeley Creek Wastewater Treatment Plant (Seeley Creek WWTP), located off Highway 138 on the Camp Seeley road, has a design capacity 0.5 MGD and processes an average flow of 0.15 MGD. This plant was constructed in approximately 1972 and serves approximately 25 percent of the sewered area.

Disinfected secondary effluent from these plants is discharged to a single outfall pipeline which conveys all of the treated wastewater to the Las Flores Ranch area, north of Silverwood Lake. The CSD is currently regulated by the Lahontan Regional Water Quality Control Board (RWQCB) Waste Discharge Requirements (WDR), Board Order 6-94-57 and Las Flores Ranch WDR, Board Order 6-96-24 for effluent discharged at the Las Flores Ranch area.

#### 3.1 Existing Huston Creek WWTP facilities

The existing Huston Creek WWTP facility consists primarily of: headworks, primary clarification, low-rate trickling filter, secondary clarification, and chlorine contact disinfection to achieve disinfected secondary-23 effluent, as defined by the California Code of Regulations Title 22 (Figure 4). Sludge is wasted from the primary clarifiers, thickened in a gravity sludge thickener, and dewatered using a belt-press.

Huston Creek WWTP was originally constructed in 1952. Upgrades to this facility were as follows:

- 1972 – New grit washer, gravity thickener, and chlorination building. Replacement of recirculation pumps. Retrofit of primary clarifiers with rotating sludge scrapers and new skimmer arms, and operations building.

- 1983 – Miscellaneous equipment replacement and improvements including sump pumps, instrumentation, controls, valves, and a blower. Construction of influent overflow structure and headworks bypass pipe.
- 1984 – New sludge dewatering building, equipment, and associated modifications.
- 1995 – New septage receiving structure.
- 1996 – New emergency storage reservoir tank.
- 2001 – New odor reduction unit.

As sewage enters a plant for treatment, it flows through a screen, which removes large objects such as rags and sticks that might clog pipes or damage equipment. After sewage has been screened, it passes into a grit chamber, where heavy inorganic materials such as, sand and small stones settle to the bottom and are removed from the process.

Screened and dewatered wastewater enters the primary clarifiers where organic solids are allowed to settle. The settled solids (primary sludge) is pumped to the gravity thickener prior to dewatering. Primary clarifier effluent (i.e. water and residual solids) flows by gravity to the trickling filter for biological treatment of residual organics. Recirculation pumps take trickling filter effluent and return it to the top of the trickling filter for additional treatment. The remainder of the trickling filter effluent enters a secondary clarifier where trickling filter humus (i.e. sloughed biofilm) is allowed to settle. Settled trickling filter humus is pumped to the primary clarifiers. Secondary clarifier effluent is dosed with sodium hypochlorite for disinfection in the chlorine contact chamber. Treated disinfected water is discharged into an outfall pipe which conveys effluent to the CSD's effluent disposal site.

Primary sludge is pumped to a gravity thickener. The thickener is a conical bottom tank that allows sludge to settle and increase in concentration. Thicker sludge requires less storage and dewatering capacity. Decanted sludge thickener water is returned to the headworks for re-treatment. Thickened sludge is transferred to the thickened sludge holding tank where it is stored and ultimately fed to the belt filter press for dewatering. Dewatered sludge cake is conveyed to a hauling truck for disposal at an offsite facility. Belt filter pressate and washwater are pumped back to the headworks for re-treatment.

## **4 PROJECT PURPOSE AND NEED**

The Project will reduce the risk of infrastructure failure and improve effluent water quality at Huston Creek WWTP by upgrading the WWTP's aging infrastructure. The existing clarifiers are aging and at a higher risk of structural failure, which could result in sewage spill into the environment. The existing clarifiers are also less effective in treatment compared to modern clarifier design and equipment. In addition, the existing dewatering equipment has reached the end of its useful life and the current facility does not accommodate new, more efficient equipment and facilities to sustain the CSD's solids processing needs into the future. Currently, the plant is not equipped with a backup emergency generator to power critical process equipment upon utility power outage. Weather, infrastructure, and climate at the treatment plant result in numerous power outages each year, which require portable generators and challenging plant operating conditions which, if prolonged, could result in diminished treatment and regulatory violations. Once completed, the Project will protect the environmental resources of the San Bernardino National Forest, Huston Creek, and Silverwood Lake from the negative impacts of a potential sewage spill as well as protect the environmental and agricultural resources of the downstream Las Flores Ranch and West Fork Mojave River by ensuring high quality treated effluent continues to be discharged from the effluent outfall pipeline.

## **5 PROJECT COMPONENTS**

The CSD proposes to add a primary clarifier, backup generator, trickling filter recirculation pumps, and a sludge dewatering building with associated sludge dewatering and conveyance equipment (proposed Project). Construction is estimated to begin in approximately 2020 and last approximately 24 months. The existing facilities in the proposed project area were constructed in 1952 (e.g. primary clarifiers) and 1984 (e.g. sludge handling

facility). These facilities are reaching the end of their serviceable life, as well as are not designed to meet current engineering standards and community wastewater treatment demands.

The new primary clarifier is proposed to be approximately 38 feet in diameter and approximately 15 feet deep. This will provide redundancy for the two existing clarifiers which are each approximately 26 feet in diameter and approximately 8 feet deep. The new primary clarifier will act as the primary wastewater clarifier, designed to process the existing capacity of the two existing clarifiers, and the existing clarifiers will serve as redundancy. Each of the two existing clarifiers have a design capacity of 0.35 MGD, and the new clarifier will have a design capacity of 0.7 MGD.

The new dewatering building will be a two-story building. It is estimated to be approximately 34 feet wide by 51 feet long by 30 feet tall. An approximately 23 foot square by 15 foot high reinforced concrete thickened sludge holding tank with mixing system will be constructed adjacent to the new dewatering building. Equipment in the building will include:

- Two (2) thickened sludge pumps,
- Polymer storage and dosing system,
- Two (2) dewatering screw presses with motors,
- Dewatered cake conveyor system consisting of approximately three (3) conveyors, and
- Two (2) filtrate pumps.

The Project's new Dewatering Building will lower the amount of biosolids needed to be hauled out of Huston Creek WWTP, reducing the amount of hauling used by CSD and the amount of greenhouse gases produced by the biosolids hauling trucks.

The Project will include installation of a backup emergency generator to supply power to the full treatment plant upon utility power outage. Weather, infrastructure, and climate at the treatment plant result in numerous power outages each year, which currently require portable generators. Response to power outages is challenging for plant operators and if the outage is prolonged, it could result in diminished treatment and regulatory violations.

The Project will also replace the existing Huston Creek WWTP trickling filter recirculation pumps with new recirculation pumps. Recirculation pumps return trickling filter effluent to the top of the trickling filter for additional treatment. The new pumps will have variable frequency drives (VFDs). The VFDs will allow the new pumps to pump less during low WWTP inflow periods, creating a lower overall energy consumption. Assuming that the existing pumps run at 75% efficiency and the new pumps will run at 95%, pump installation is expected to produce 48 to 60 kWh per day in energy savings from existing plant operations.

## 5.1 Construction Scenario

Construction is anticipated to begin in 2020 and will last approximately 24 months. All work will occur within the existing Huston Creek WWTP facility.

In general, construction consists of:

- Earthwork (excavation, compaction, soil import/export, slope grading and filling. Approximately 2,050 cubic yards of excavated materials will be removed from the site, using approximately 15 truckloads in one day).
- Installation and relocation of underground utilities (relocations include storm drain, electrical facilities and miscellaneous piping),
- Delivery of structural materials (rebar, steel beams and concrete), and

- Pouring of concrete and paving (base placement, pavement placement, curbs, surface drainage infrastructure).

## 5.2 Potential Construction Equipment

Project construction will require the use of heavy equipment. While the final types and numbers of construction equipment will be determined by the construction contractor, Table 1 is an engineer's estimate of the types and numbers of equipment that will be utilized for this work.

**Table 1**  
**Potential Equipment for Huston Creek WWTP Construction**

Equipment Type	Numbers of Equipment	Duration
Backhoe loader	2	24 months
Excavator (standard/full size)	1	24 months
Dump Truck/Hauling Truck	10	6 months
Delivery Truck (for structural items, such as rebar)	1	24 months
Asphalt paver	1	5 days
Steel wheel roller	1	5 days
Concrete Mixer truck	3	10 days
Concrete boom pump truck (28 meter Z-fold)	1	10 days
Truck mounted boom crane (Terex T340-1)	1	10 days
Excavator mounted vibratory pile driver	1	5 days
Temporary bypass pump skid/diesel engine (2200 gpm)	2	30 days
Electric Generator (5 kW)	1	6 months

## 6 PROJECT ALTERNATIVES

### Alternative 1 - Southeast Driveway Widening

An alternative driveway design was evaluated to the southeast of the existing primary clarifiers to widen the road for vehicular traffic. After survey data was analyzed, it was determined that even with the new primary clarifier adjacent to this southeast driveway, the existing southeast driveway would maintain a 15-foot width and would not need to be widened to allow for vehicular traffic. Therefore, in further designs, the southeast driveway was not widened outside the existing fence line of the Huston Creek Wastewater Treatment Plant.”

### Alternative 2 - Primary Clarifier Location Alternative

An alternative primary clarifier location was evaluated to the northwest of the existing primary clarifiers. This site was determined to be not feasible due to the fact that it would restrict the access road to the new and existing sludge dewatering building and create difficult driving routes for hauling trucks.

### Alternative 3 – Construct Modifications Adjacent to Existing Facilities (Preferred Alternative)

Under Alternative 3, the CSD would add a primary clarifier, backup generator, trickling filter recirculation pumps, and a sludge dewatering building with associated sludge dewatering and conveyance equipment (proposed Project) adjacent to the existing facilities on site and within the existing developed footprint.

#### **Alternative 4 - No Action Alternative**

Under the No Action Alternative, the Proposed Action would not be undertaken. No facility upgrades would be made and public health and safety may be compromised due to increased potential for overflows and equipment breakdowns.

## **7 PURPOSE OF THIS INITIAL STUDY/ENVIRONMENTAL ASSESSMENT**

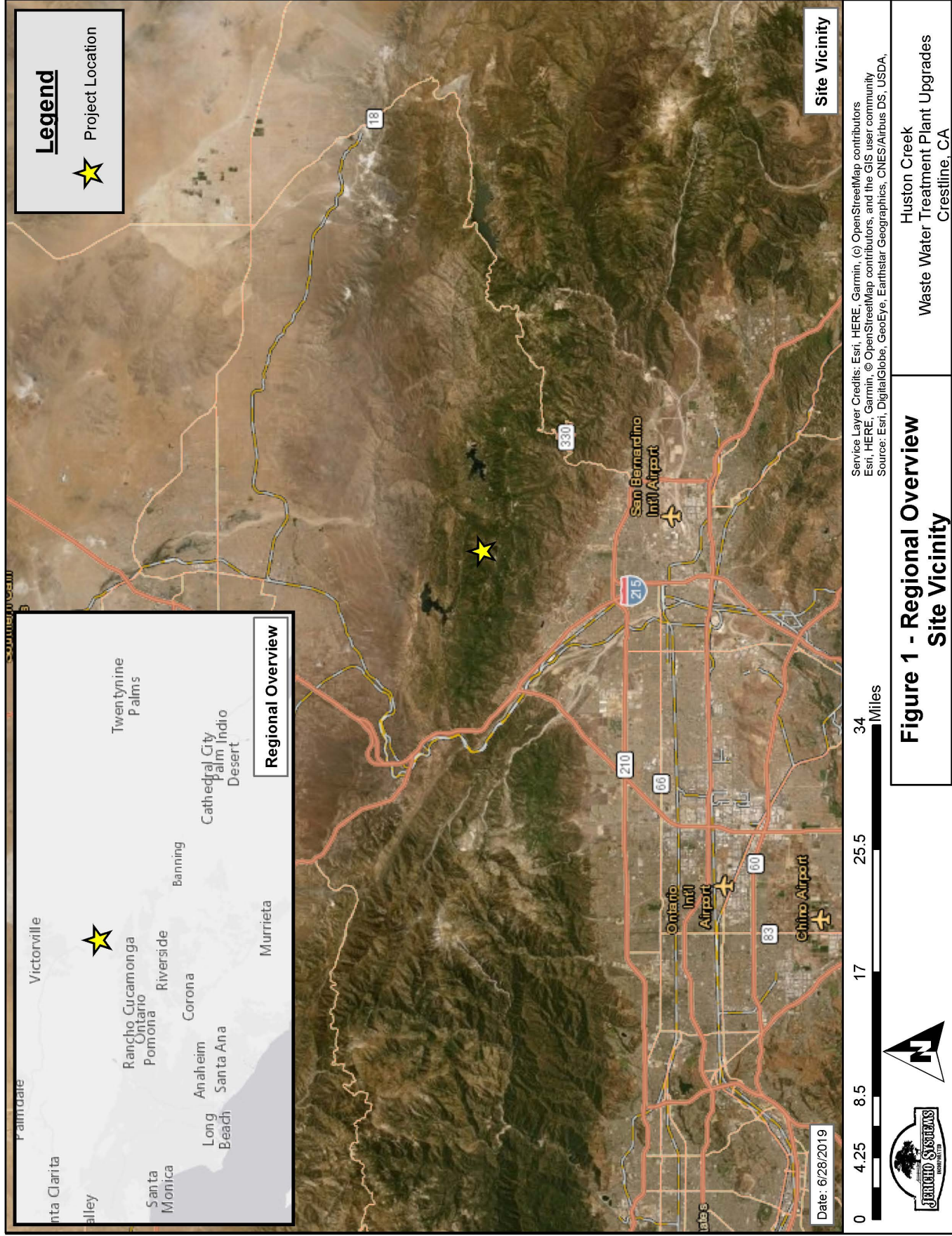
The proposed Project/Action is a discretionary action under the California Environmental Quality Act (CEQA) Guidelines Section 15378 identifies a Project as an activity that is undertaken by a public agency and/or where the activity would be supported in whole or in part through public grants or loans. The CSD is proposing obtain a low-interest loan through the State Clean Water State Revolving Fund (CWSRF) program to fund the Huston Creek Wastewater Treatment Plant capital improvement project. The CWSRF program is a partnership United States Environmental Protection Agency (USEPA) that provides communities a permanent, independent source of low-cost financing for a wide range of water quality infrastructure projects.

The State Water Board, Division of Financial Assistance administers the CWSRF program. Due to the federal nexus with USEPA, federal laws and regulations (e.g. federal cross-cutters) apply to all projects pursuing CWSRF financing. Under the CWSRF Program, the Division under the State Water Board uses the CEQA document plus the federal cross-cutting documentation in place of a National Environmental Policy Act (NEPA) document in what is termed “CEQA-Plus” documentation. The State Board does not complete a NEPA review process, but rather completes the “NEPA-like” process of CEQA-Plus.

The CEQA-Plus MND is where the Initial Study is prepared both in accordance with the California Code of Regulations, Title 14, Article 5 and Article 7 as well as federal regulations, specifically, *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 CFR Sections 1500–1508) issued by the Council on Environmental Quality (CEQ) (1970, as amended), the *Environmental Review Guide for Special Appropriation Grants* (EPA 2008), and the *Environmental Review Process Guidelines for State Revolving Fund Applicants* (SWRCB 2004).

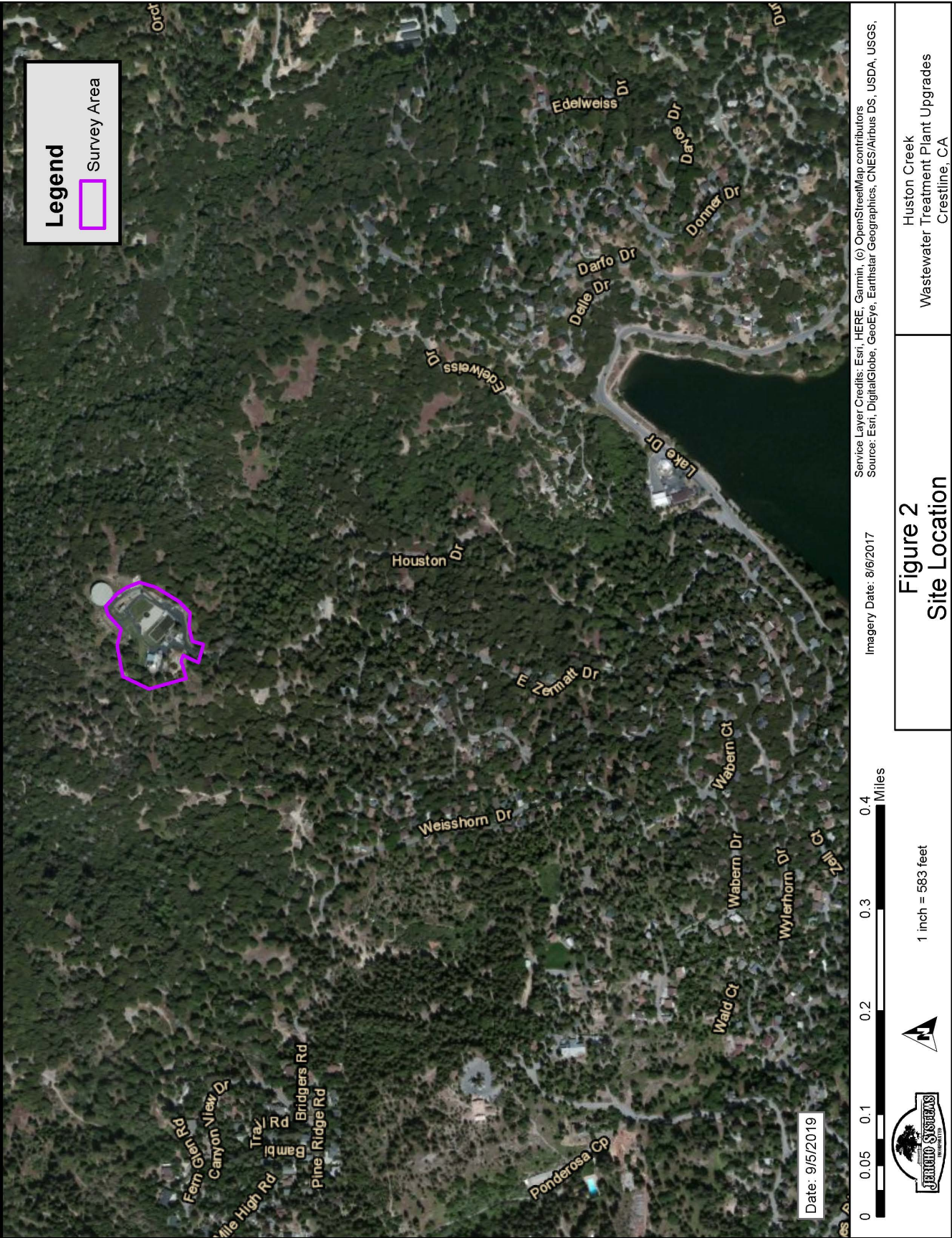
A “CEQA-Plus” environmental document contains information pertaining to both State and federally-designated endangered species, cultural resource protection, conformity with applicable air management plans, and other federal executive orders and federal regulations.





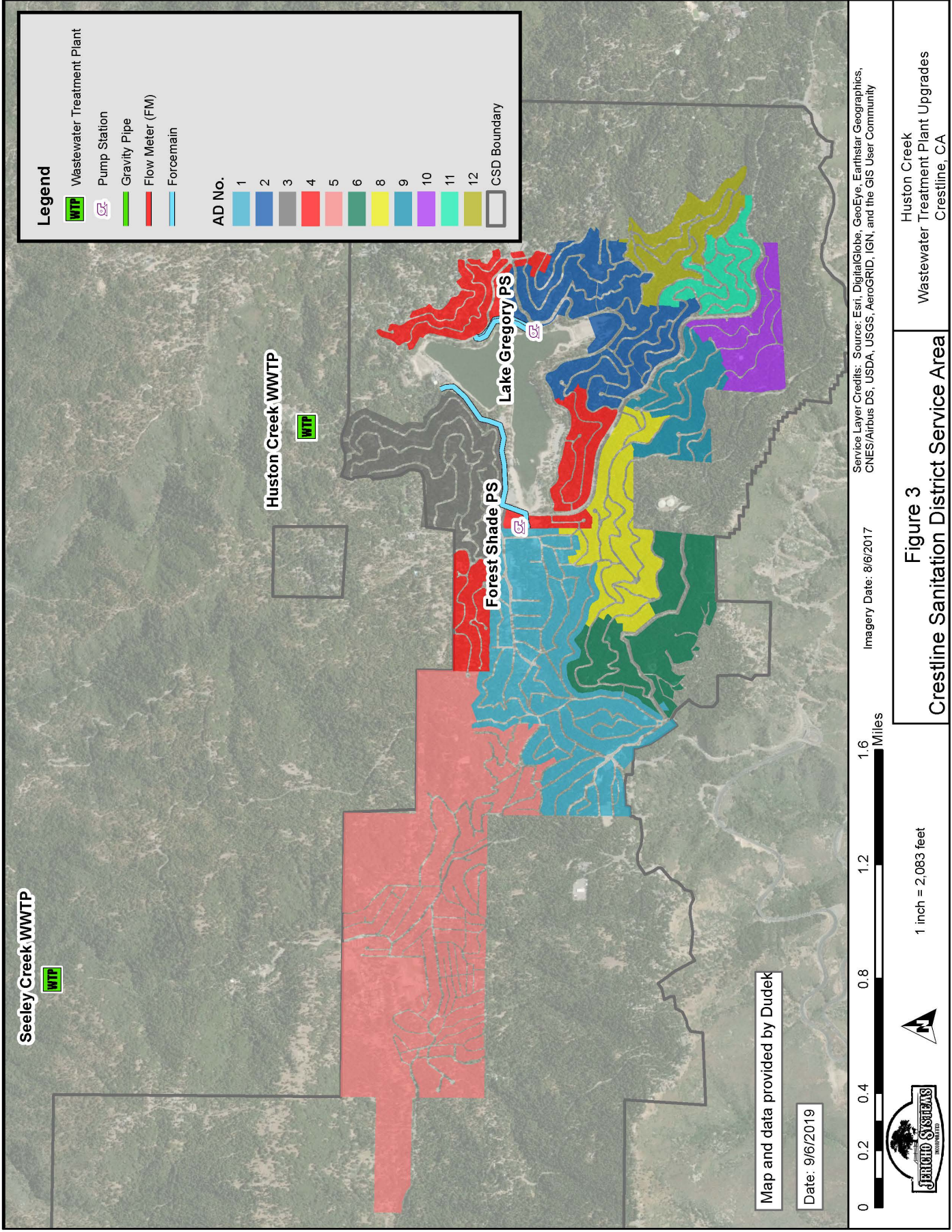
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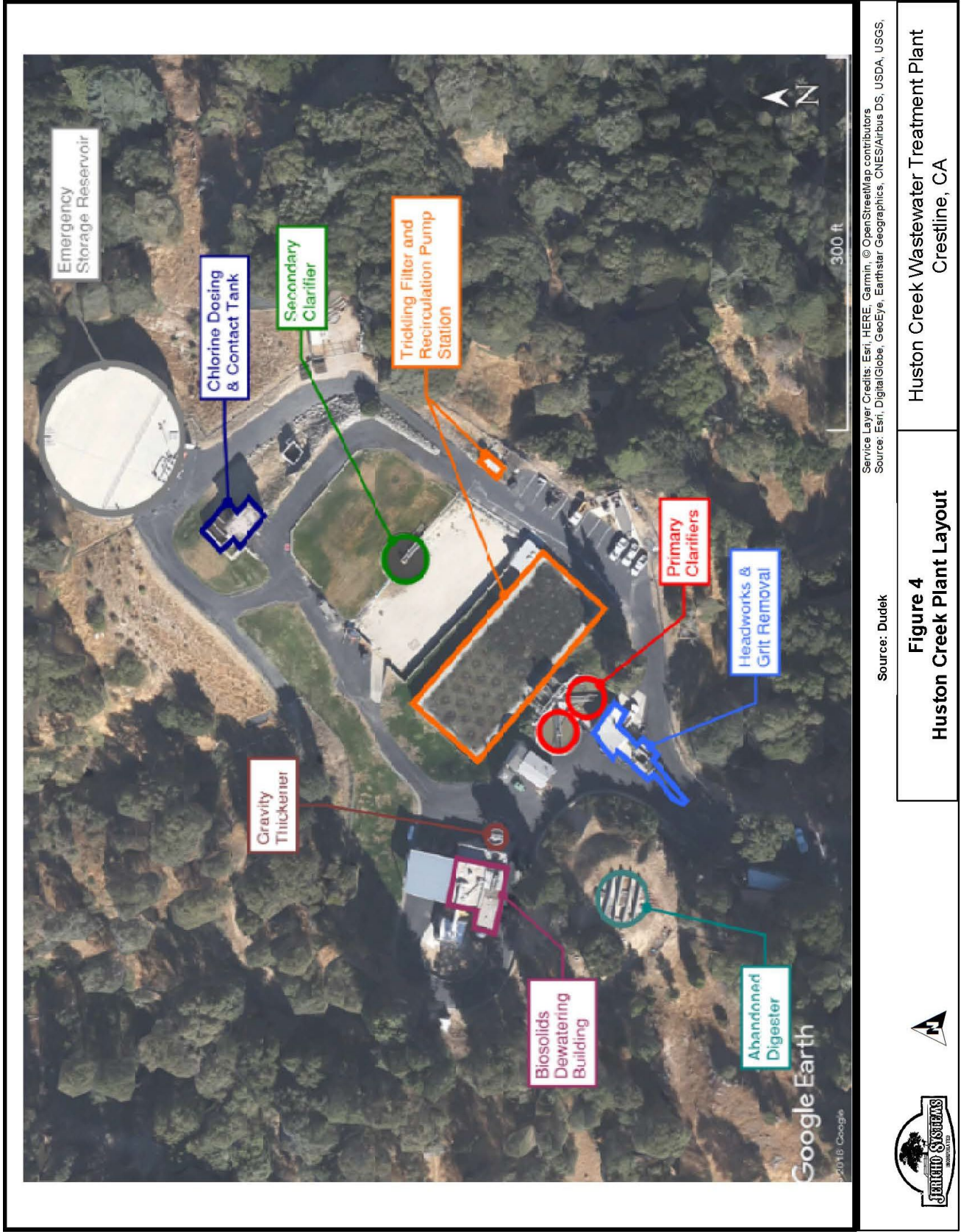
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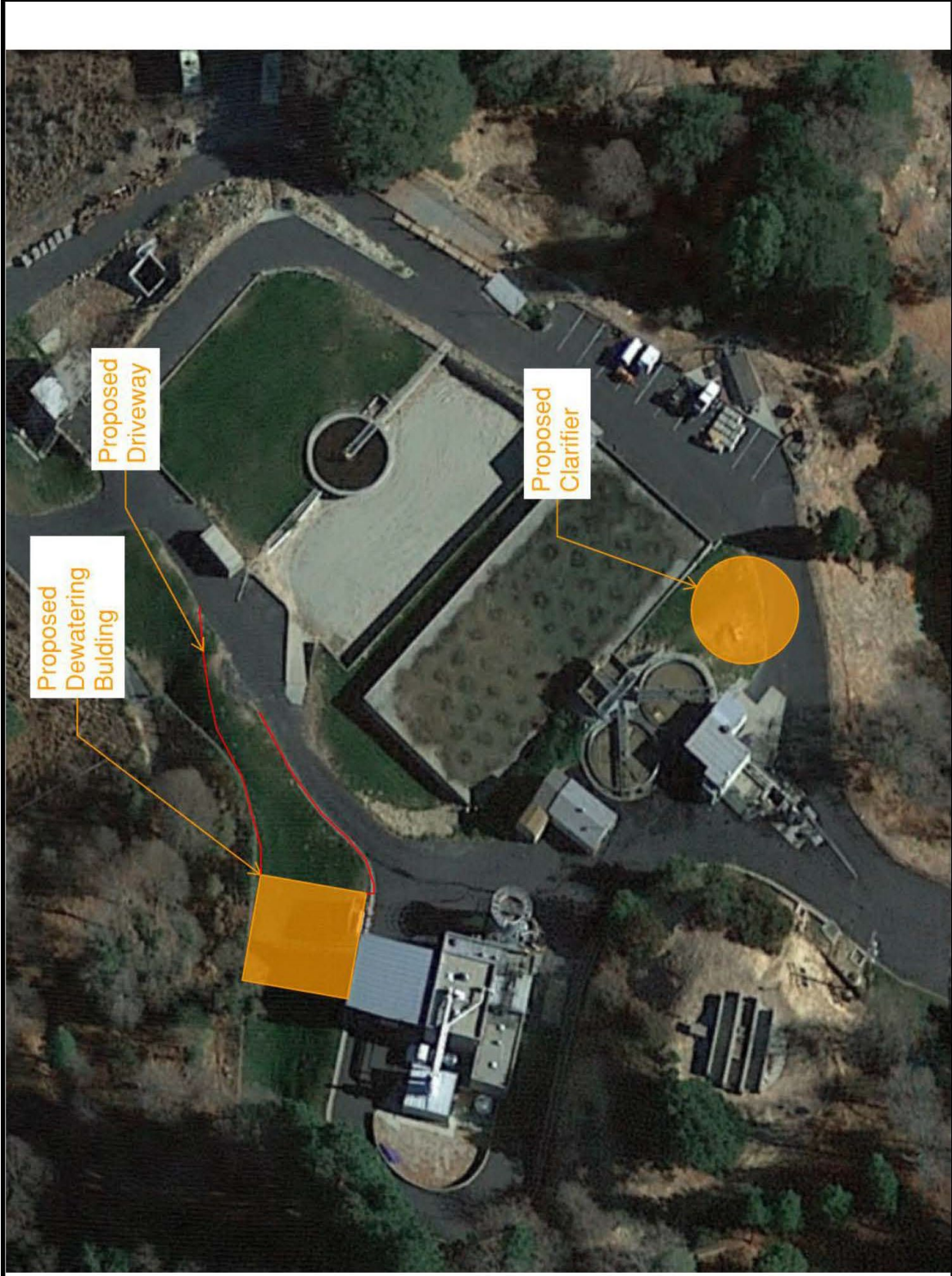
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Figure provided by Dudek

**Houston Creek Wastewater Treatment Plant Upgrades**  
Crestline, CA

**Figure 5**  
**Proposed Improvements**



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## 8 ENVIRONMENTAL CHECKLIST FORM

1. **Project Title:** Huston Creek WWTP Dewatering Building and Primary Clarifier Project
2. **Lead Agency Name:** Crestline Sanitation District  
**Physical Address:** Physical Address: 24516 Lake Drive, Crestline, California 92325-3395  
**Mailing Address:** PO Box 3395, Crestline, California 92325-3395
3. **Contact Person:** Rick Dever, General Manager  
email: rdever@crestlinesanitation.com  
**Phone Number:** Phone (909) 338-1751
4. **Project Location:** Topographic Quad (USGS 7.5"): *Silverwood Lake*  
Topographic Quad Coordinates: Township 2 North, Range 4 West, Section 14  
Latitude: 34.25424 N, Longitude -117.27056 W
6. **General Plan Designation:** Crest Forest Community Plan – Industrial
7. **Zoning:** Same as General Plan Designation
8. **Description of project: (Describe the whole action involved, including but not limited to later phases of the project and any secondary, support, or off-site features necessary for its implementation).**

The Crestline Sanitation District (CSD) is proposing to upgrade its existing wastewater treatment plant by adding a primary clarifier, backup generator, trickling filter recirculation pumps, and a sludge dewatering building with associated sludge dewatering and conveyance equipment (proposed Project). Construction is estimated to occur in approximately 2020 and last approximately 24 months. The existing facilities in the proposed project area were constructed in 1952 (e.g. primary clarifiers) and 1984 (e.g. sludge handling facility). These facilities are reaching the end of their serviceable life, and are not designed to meet current engineering standards and community wastewater treatment demands.

### 9. Surrounding land uses and setting (Briefly describe the project's surroundings)

The existing plant sits on a knoll of a slope, and the developed area encompasses approximately 3 acres, surrounded by a fence. The Proposed work will primarily occur within the fenced, developed area of the existing facility. However, some minor modifications to the adjacent property outside the existing fence line may be needed to accommodate some of the proposed improvements.

The immediately adjacent area is forested land. There is no commercial or residential development adjacent to the project. The closest residences are approximately 1,000 feet to the southwest along Zermatt Drive, and approximately 1,700 feet to the east at the end of Orchard Road.

Due to the natural elevation changes throughout the Crestline community, the existing Huston Creek WWTP is at a lower elevation than some of the adjacent surrounding community. The residential area immediately surrounding the facility is at a higher elevation than the facility, however, the facility is difficult to view from the adjacent surrounding residences due to the tall trees surrounding the plant. The plant can be viewed primarily from areas of the community east of the plant that are higher in elevation.

**10. Other agencies whose approval is required (e.g., permits, financing approval, or participation agreement.):**

- Construction Compliance – Stormwater Discharge. Construction projects that disturb 1 acre of land or more are required to obtain coverage under the NPDES General Permit for Construction Activities (General Construction Permit), which requires the applicant to file a notice of intent (NOI) to discharge stormwater and to prepare and implement a SWPPP. The SWPPP includes an overview of the Best Management Practices (BMPs) that would be implemented to prevent soil erosion and discharge of other construction-related pollutants that could contaminate nearby water resources. The SWPPP will also address post-construction measures for water quality protection. For facilities with less than 1 acre of disturbance, an Erosion Control Plan would be prepared that would address control of similar construction-related discharges.

*Lead Agency Discretionary Actions:*

Discretionary actions that may be taken by the Lead Agency include, but are not limited to, the following:

- Award contracts for construction
- Purchase property or easements

**11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?**

*NOTE: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21080.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.*

On June 12, 2019, CRM TECH submitted a written request to the State of California Native American Heritage Commission (NAHC) for a records search in the commission's Sacred Lands File. Following the NAHC's recommendations and previously established consultation protocol, CRM TECH further contacted a total of six Native American representatives in the region in writing on June 28, 2019, for additional information on potential Native American cultural resources in the project vicinity. Follow-up telephone solicitations were carried out between July 16 and 24, 2019. Correspondence between CRM TECH and the Native American representatives is summarized below and attached to the report in Appendix C.

Name	Tribe/Affiliation	Telephone Contacts	Comments
Matthew Leivas, Director of the Chemehuevi Cultural Center	Chemehuevi Indian Tribe	9:05 am, July 16, 2019	The tribe has no comments at this time.
Travis Armstrong, Tribal Historic Preservation Officer	Morongo Band of Mission Indians	9:18 am, July 16, 2019 8:26 am, July 24, 2019	Left voice messages; no response to date.
Donna Yocum, Chairperson	San Fernando Band of Mission Indians	9:12 am, July 16, 2019	The tribe defers to the San Manuel Band of Mission Indians.
Lee Clauss, Director of Cultural Resources	San Manuel Band of Mission Indians	None	Jessica Mauck, Cultural Resources Analyst, responded on behalf of Ms. Clauss by e-mail on July 1, 2019 (copy attached).
Mark Cochrane, Co-Chairperson	Serrano Nation of Indians	9:16 am, July 16, 2019; 9:25 am, July 19, 2019	Mr. Cochrane made the following requests: (1) notification of any cultural resources or human remains discovered during ground-disturbing activities; (2) further consultation with the lead agencies; and (3) a copy of the final report.
Wayne Walker, Co-Chairperson	Serrano Nation of Indians	9:20 am, July 16, 2019	Mark Cochrane responded on behalf of the tribe (see above).

On July 10, 2019, the CSD notified the following tribal entities pursuant to the provisions of AB52:

- Lee Clauss, Director-CRM Department, San Manuel Band of Mission Indians 26569 Community Center Drive Highland, CA 92346.

On August 8, 2019, Jessica Mauck requested copies of the cultural resources report, geotechnical report and project plans, and the CSD emailed her the information on August 28, 2019.

On August 30, 2019, Ms. Mauck requested via email that mitigation measures be in place to protect potential tribal resources. These mitigation measures have been incorporated into this document.

On July 10, 2019, the CSD additionally notified the following tribal entities per their request during CRM Tech's outreach:

- Mark Cochrane, Co-Chairperson, Serrano Nation of Mission Indians, P. O. Box 343, Patton, CA, 92369. On July 17, 2019, Mr. Armstrong responded via email stating he had no concerns and deferred to San Manuel.
- Wayne Walker, Co-Chairperson, Serrano Nation of Mission Indians, P. O. Box 343, Patton, CA, 92369. No response from the tribe was received.
- Donna Yocum, Chairperson, San Fernando Band of Mission Indians, P.O. Box 221838, Newhall, CA, 91322. No response from the tribe was received.
- Travis Armstrong, Tribal Historic Preservation Officer, Morongo Band of Mission Indians, 12700 Pumarra Road, Banning, CA 92220. No response received.

- Robert Martin, Chairperson, Morongo Band of Mission Indians, 12700 Pumarra Road, Banning, CA 92220. No response received
- Denisa Torres, Cultural Resources Manager, Morongo Band of Mission Indians, 12700 Pumarra Road, Banning, CA 92220. No response received
- Charles Wood, Chairperson, Chemehuevi Indian Reservation, 1990 Palo Verde, PO Box 1976, Havasu Lake, CA 92363. No response received.

## ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The Proposed Project could potentially affect (“Potentially Significant” or “Less than Significant with Mitigation Incorporated”) the environmental factor(s) checked below. The following pages present a more detailed checklist and discussion of each environmental factor and identifies where mitigation measures would be necessary to reduce all impacts to less than significant.


<input type="checkbox"/>	Aesthetics	<input type="checkbox"/>	Agricultural / Forest Resources	<input type="checkbox"/>	Air Quality
<input checked="" type="checkbox"/>	Biological Resources	<input checked="" type="checkbox"/>	Cultural Resources	<input type="checkbox"/>	Energy
<input checked="" type="checkbox"/>	Geology / Soils	<input type="checkbox"/>	Greenhouse Gas Emissions	<input checked="" type="checkbox"/>	Hazards / Hazardous Materials
<input type="checkbox"/>	Hydrology / Water Quality	<input type="checkbox"/>	Land Use / Planning	<input type="checkbox"/>	Mineral Resources
<input type="checkbox"/>	Noise	<input type="checkbox"/>	Population / Housing	<input type="checkbox"/>	Public Services
<input type="checkbox"/>	Recreation	<input type="checkbox"/>	Transportation	<input checked="" type="checkbox"/>	Tribal Cultural Resources
<input type="checkbox"/>	Utilities / Service Systems	<input checked="" type="checkbox"/>	Wildfire	<input type="checkbox"/>	Mandatory Findings of Significance

**DETERMINATION** (To be completed by the Lead Agency)

On the basis of this initial evaluation, the following finding is made:

	The proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
X	Although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
	The proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
	The proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
	Although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Jericho Systems, Inc.  
Prepared by

  
Signature

10/5/19  
Date

10/5/19  
Date



## EVALUATING ENVIRONMENTAL IMPACTS:

- 1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g. the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g. the project would not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
- 2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
- 3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect is significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.
- 4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from Section XVII, "Earlier Analyses," may be cross-referenced).
- 5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
  - a) Earlier Analyses Used. Identify and state where they are available for review.
  - b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
  - c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
- 6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g. general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
- 7) Supporting Information Sources. A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
- 8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.
- 9) The explanation of each issue should identify:
  - a) the significance criteria or threshold, if any, used to evaluate each question; and
  - b) the mitigation measure identified, if any, to reduce the impact to less than significance.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>I. AESTHETICS:</b> Except as provided in Public Resources Code Section 21099, would the project:				
a) Have a substantial adverse effect on a scenic vista?			X	
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
c) In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?			X	
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			X	

**SUBSTANTIATION:** (Check ☐ if project is located within a view-shed of any Scenic Route listed in the General Plan.

### **Environmental Setting**

The Project area is located in the San Bernardino County unincorporated area of Crestline located in the San Bernardino Mountains, located approximately 18 miles north of the City of San Bernardino.

The Project area is identified as part of the Crest Forest Community Plan by the County of San Bernardino's 2007 General Plan. The community of Crest Forest includes approximately 18 square miles of unincorporated area located west of Lake Arrowhead and south of Lake Silverwood and consists of several communities including Cedar Pines Park, Valley of Enchantment, and the Lake Gregory Village area. The climate for the community plan consists of a mild climate and four distinct seasons. The Plan area is entirely within the San Bernardino National Forest primarily at an altitude of approximately 4,700 feet above mean sea level (msl) although the elevation of the entire community varies because of its mountainous terrain.

The Huston Creek WWTP has existed in the community since the early 1950s. The ridgeline and site descend to the northeast with elevations at the site ranging from 4490 msl near the southwest portion of the site by the existing digester to approximately 4,425 feet msl near the existing chlorine building in the northeast portion of the site.

Lake Gregory is a key scenic feature within the community and hosts 84 surface acres for swimming and water sports. It is located upstream of the Project area. It is a manmade lake, fed by natural springs, and outlets into Huston Creek.

## **Impact Analysis**

### *a) Have a substantial adverse effect on a scenic vista?*

**Less Than Significant.** The CEQA Guidelines do not provide a definition of what constitutes a “scenic vista” or “scenic resource” or a reference as to from what vantage point(s) the scenic vista and/or resource, if any, should be observed. However, a scenic vista can generally be defined as a viewpoint from a public vantage that provides expansive views of a highly-valued landscape for the benefit of the general public. Common examples include undeveloped hillsides, ridgelines, and open space areas that provide a unifying visual backdrop to a developed area. Scenic resources are those landscape patterns and features that are visually or aesthetically pleasing and that contribute affirmatively to the definition of a distinct community or region such as trees, rock outcroppings, and historic buildings.

The Project site has existed since the 1950s. The site can be viewed from higher locations in some parts of the community, but not others due to distance and tree coverage across the landscape. There are no officially designated local or State scenic vistas in the community. However, Lake Gregory is considered a locally-important visual resource. The Project site lies north of Lake Gregory, at a lower elevation, and cannot be viewed from Lake Gregory due to the distance and the heavily forested area between the lake and the Project area.

Eleven roadways located within the Crest Forest Community Plan area have been designated as scenic routes by San Bernardino County: SR-18, SR-138, Crest Forest Drive, Dart Canyon Road, Devil’s Canyon Road, Lake Drive, Lake Gregory Road, North Road, Playground Drive, San Moritz Road, and Sawpit Canyon Road/Sawpit Creek Road. Both State Highways, SR-18 and SR-138, are also eligible for designation as scenic routes by the State under the State under the California Scenic Highways Program. Of these roadways, the Project site can only be viewed from one vantage point along Dart Canyon Road, where the elevation is higher than the Project site, and the view is more expansive of the entire forest area to the west toward Lake Silverwood (refer to Photo 1 at the end of this section). However, the treatment plant has always been an existing feature in the viewshed. Adding a building and a primary clarifier will not change the view of the existing facility. Therefore, there is a less than significant impact.

### *b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?*

**No Impact.** The Department of Transportation (Caltrans) manages the State Scenic Highway Program, provides guidance, and assists local government agencies, community organizations, and citizens with the process to officially designate scenic highways. The Project site is accessed by a CSD-owned roadway that leads directly from the administration building to the Plant and therefore does occur within or along a scenic highway or an eligible scenic highway in the community. Therefore, there will be no damage to scenic resources. There is no impact.

### *c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?*

**Less Than Significant.** The Project is located within a rural area. The mountain character of the Crest Forest community is defined by the natural vegetation, natural topography, open space, Lake Gregory, and the prominence of low-density residential development. The character of the community is further defined by the limited commercial and industrial uses. The Huston Creek WWTP is generally hidden from view from most parts of the community, due to the terrain of the community. The Project will occur primarily within the existing developed site

and include the addition of one building and one clarifier, and there are similar structures that already exist on site. Therefore, there is a less than significant impact.

*d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?*

**Less Than Significant.** The County of San Bernardino does not permit construction activities outside of daylight hours, and construction would occur during daylight hours, therefore, the construction associated with the proposed Project would not cause the emission of light beyond existing circumstances in that area.

Additionally, the building lighting is not on overnight unless there are people working, which is only in emergencies, therefore nighttime lighting is not subjected to heavy use.

The community falls within the County of San Bernardino's development code for glare and outdoor lighting (Title 8, Division 3, Chapter 83.07, Section 83.07.040 – Glare and Outdoor Lighting – Mountain and Desert Regions). The proposed Project includes the installation Light Emitting Diode (LED) lamps illuminating the sludge holding tank area, the roll-up door that faces East (trickling filter side) and a switched pole light in the area of the generator.

The LED lighting will spread out uniformly across the facility while maintaining a lower power density. The LED lamps will be directional in that they will emit light for a 90 degree cutoff, unlike standard High Pressure Sodium (HPS) lamps used in most security lighting which emit light omnidirectionally, or 360 degrees. Therefore, the LED lamps used throughout the facility will emit almost no leakage onto off site areas or upward toward the night sky. Therefore, the Project will not create a substantial source of light or glare that would adversely affect day or nighttime views and the impact is less than significant.

#### **Mitigation Measures:**

No mitigation measures are required.

#### **Impact Conclusions:**

No significant adverse impacts are identified or anticipated, and no mitigation measures are required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>II. AGRICULTURE AND FORESTRY RESOURCES:</b> In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				X
b) Conflict with existing zoning for agricultural use or a Williamson Act contract?				X
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				X
d) Result in the loss of forest land or conversion of forest land to non-forest use?				X
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?				X

**SUBSTANTIATION:** (Check ☐ if project is located in the Important Farmlands Overlay):

### **Environmental Setting**

The Project site occurs within the existing developed facility situated, surrounded by forested land.

### **Impact Analysis**

- a) *Convert Prime Farmland, Unique Farmland or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?*

**No Impact.** The Project site is not identified within the survey limits of California Department of Conservation, Farmland Mapping and Monitoring Important Farmland Finder. No land under Williamson Act Contract occurs at the Project alignment and no impacts will occur.

*b) Conflict with existing zoning for agricultural use or a Williamson Act contract?*

**No Impact.** None of the land on or near the Project site is currently under agricultural production, nor are any parcels under a Williamson Act contract. Therefore, no impact is anticipated from the proposed Project.

*c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?*

**No Impact.** Forest land is defined in Public Resources Code section 12220(g) as “land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits.” No timberland or lands zoned Timberland Production as defined above are within the Project site, nor is the Project located in an area zoned for forest land or timber production. Therefore, the Project will not impact the ability of land’s ability to support 10 percent native tree cover of any species; thus, no forest lands will be reclassified as non-forest lands under Public Resources Code Section 12220(g). Therefore, there will be no impacts under this criterion.

*d) Result in the loss of forest land or conversion of forest land to non-forest use?*

**No Impact.** As mentioned above, the disturbances associated with the Project activities would not impact the lands’ ability to support 10-percent native tree cover of any species, and thus no forest lands as defined in Public Resources Code Section 12220(g) would be lost. In addition, no such lands would be converted to non-forest use as a result of the project construction and operations activities. Therefore, there will be no impacts under this criterion.

*e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?*

**No Impact.** The construction and operation of the proposed Project do not involve other changes in the existing environment that could result in the conversion of farmland to non-agricultural use or forest land to non-forest land use. Therefore, there will be no impacts to this criterion.

#### **Mitigation Measures:**

No mitigation measures are required.

#### **Impact Conclusions:**

No significant adverse impacts are identified or anticipated, and no mitigation measures are required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>III. AIR QUALITY:</b> Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?			X	
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?			X	
c) Expose sensitive receptors to substantial pollutant concentrations?			X	
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?			X	

**SUBSTANTIATION:** (Discuss conformity with the South Coast Air Quality Management Plan, if applicable):

A technical study of the Project's potential Air Quality impacts was prepared and is contained in Appendix A.

### **Regulatory Setting**

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

#### *Federal and State Regulations*

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

- Ozone
- Nitrogen Dioxide
- Lead
- Particulate Matter (PM10 and PM2.5)
- Carbon Monoxide
- Particulate Matter
- Sulfur Dioxide

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

Each state prepares State Implementation Plans (SIP) that describes existing air quality conditions and measures that will be followed to attain and maintain federal standards. The SIP for California is administered by CARB, which has overall responsibility for statewide air quality maintenance and air pollution prevention. The California SIP incorporates individual federal attainment plans for regional air districts—air district prepares their federal attainment plan, which sent to CARB to be approved and incorporated into the California SIP. Federal attainment plans include the technical foundation for understanding air quality (e.g., emission inventories and air quality monitoring), control measures and strategies, and enforcement mechanisms. See <http://www.arb.ca.gov/research/aaqs/aaqs.htm> for additional information on criteria pollutants and air quality standards.

The federal and state ambient air quality standards are summarized in Table 2, *Ambient Air Quality Standards*, and can also be found at <http://www.arb.ca.gov/research/aaqs/aaqs2.pdf>.

Several pollutants listed in Table 3 were not addressed in the project's *Air Quality Assessment*. For example, the analysis of lead is not included because the proposed project is not anticipated to emit lead. Visibility-reducing particles were not explicitly addressed because particulate matter is addressed (PM10 and PM2.5). The project is not expected to generate or be exposed to vinyl chloride because it is unlikely that the future use includes the use of the chemical processes that create this pollutant and there are no such uses in the project vicinity. The proposed project is not expected to cause exposure to hydrogen sulfide because it would not generate hydrogen sulfide in any substantial quantity.

#### *South Coast Air Quality Management District (SCAQMD)*

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

Every three years the SCAQMD prepares a new AQMP, updating the previous plan and having a 20-year horizon.

On March 3, 2017, SCAQMD adopted the 2016 AQMP. The 2016 AQMP incorporates the latest scientific and technological information and planning assumptions, including the SCAG 2016 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) and updated emission inventory methodologies for various source categories. In addition, the 2016 AQMP includes the new and changing federal requirements, the implementation of new technology measures, and the continued development of economically sound, flexible compliance approaches



**Table 2**  
**Ambient Air Quality Standards**

Pollutant	Averaging Time	California Standards <sup>1</sup>		National Standards <sup>2</sup>		
		Concentrations <sup>3</sup>	Method <sup>4</sup>	Primary <sup>3,5</sup>	Secondary <sup>3,6</sup>	Method <sup>7</sup>
Ozone (O3)	1-Hour	0.09 ppm	Ultraviolet Photometry	--	Same as Primary Standard	Ultraviolet Photometry
	8-Hour	0.070 ppm		0.070 ppm (147 µg/m³)		
Respirable Particulate Matter (PM10) <sup>8</sup>	24-Hour	50 µg/m³	Gravimetric or Beta Attenuation	150 µ/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m³		--		
Fine Particulate Matter (PM2.5) <sup>8</sup>	24-Hour	--	--	35 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m³	Gravimetric or Beta Attenuation	12 µg/m³	15 µg/m³	
Carbon Monoxide (CO)	1-Hour	20 ppm (23 µg/m³)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 µg/m³)	--	Non-Dispersive Infrared Photometry (NDIR)
	8-Hour	9.0 ppm (10 µg/m³)		9 ppm (10 µg/m³)	--	
	8-Hour (Lake Tahoe)	6 ppm (7 µg/m³)		--	--	
Nitrogen Dioxide (NO <sub>2</sub> ) <sup>9</sup>	1-Hour	0.18 ppm (339 µg/m³)	Gas Phase Chemiluminescence	100 ppb (188 µg/m³)	--	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (357 µg/m³)		0.053 ppm (100 µg/m³)	Same as Primary Standard	
Sulfur Dioxide (SO <sub>2</sub> ) <sup>10</sup>	1-Hour	0.25 ppm (655 µg/m³)	Ultraviolet Fluorescence	75 ppb (196 µg/m³)	--	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	3-Hour	--		--	0.5 ppm (1300 mg/m³)	
	24-Hour	0.04 ppm (105 µg/m³)		0.14 ppm (for certain areas) <sup>10</sup>	--	
	Annual Arithmetic Mean	--		0.14 ppm (for certain areas) <sup>10</sup>	--	
Lead <sup>11,12</sup>	30 Day Average	1.5 µg/m³	Atomic Absorption	--	Same as Primary Standard	High Volume Sampler and Atomic Absorption
	Calendar Qtr	--		1.5 µg/m³ (for certain areas) <sup>12</sup>		
	Rolling 3-Month Average	--		0.15 µg/m³		
Visibility Reducing Particles <sup>13</sup>	8-Hour	See footnote 13	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24-Hour	25 µg/m³	Ion Chromatography			
Hydrogen Sulfide	1-Hour	0.03 ppm (42 µg/m³)	Ultraviolet Fluorescence			
Vinyl Chloride <sup>11</sup>	24-Hour	0.01 ppm (26 µg/m³)	Gas Chromatography			

Source: \_\_\_\_\_.

Notes:

- California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM<sub>10</sub>, PM<sub>2.5</sub>, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
- National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM<sub>10</sub>, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m<sup>3</sup> is equal to or less than one. For PM<sub>2.5</sub>, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.
- Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
- Any equivalent measurement method which can be shown to the satisfaction of the CARB to give equivalent results at or near the level of the air quality standard may be used.
- National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
- National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
- Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.
- On December 14, 2012, the national annual PM<sub>2.5</sub> primary standard was lowered from 15 µg/m<sup>3</sup> to 12.0 µg/m<sup>3</sup>. The existing national 24-hour PM<sub>2.5</sub> standards (primary and secondary) were retained at 35 µg/m<sup>3</sup>, as was the annual secondary standard of 15 µg/m<sup>3</sup>. The existing 24-hour PM<sub>10</sub> standards (primary and secondary) of 150 µg/m<sup>3</sup> also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

9. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
10. On June 2, 2010, a new 1-hour SO<sub>2</sub> standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO<sub>2</sub> national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.  
Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
11. CARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
12. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 µg/m<sup>3</sup> as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
13. In 1989, CARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

### South Coast Air Quality Management District Rules

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

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

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

Rule 403 requires that fugitive dust be controlled with best available control measures so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. In addition, Rule 403 requires implementation of dust suppression techniques to prevent fugitive dust from creating a nuisance off site. Applicable suppression techniques are indicated below and include but are not limited to the following:

- Apply nontoxic chemical soil stabilizers according to manufacturers' specifications to all inactive construction areas (previously graded areas in active for 10 days or more).
- Water active sites at least three times daily.
- Cover all trucks hauling dirt, sand, soil, or other loose materials, or maintain at least 2 feet of freeboard in accordance with the requirements of California Vehicle Code (CVC) section 23114.
- Pave construction access roads at least 100 feet onto the site from the main road.
- Reduce traffic speeds on all unpaved roads to 15 mph or less.
- Suspension of all grading activities when wind speeds (including instantaneous wind gusts) exceed 25 mph.
- Bumper strips or similar best management practices shall be provided where vehicles enter and exit the construction site onto paved roads or wash off trucks and any equipment leaving the site each trip.
- Replanting disturbed areas as soon as practical.

- During all construction activities, construction contractors shall sweep on-site and off-site streets if silt is carried to adjacent public thoroughfares, to reduce the amount of particulate matter on public streets.

SCAQMD Rule 1113 governs the sale, use, and manufacturing of architectural coating and limits the VOC content in paints and paint solvents. This rule regulates the VOC content of paints available during construction. Therefore, all paints and solvents used during construction and operation of project must comply with Rule 1113.

Idling Diesel Vehicle Trucks – Idling for more than 5 minutes in any one location is prohibited within California borders.

### **Air Basin Attainment Status**

EPA and CARB designate air basins where ambient air quality standards are exceeded as “nonattainment” areas. If standards are met, the area is designated as an “attainment” area. If there is inadequate or inconclusive data to make a definitive attainment designation, they are considered “unclassified.” National nonattainment areas are further designated as marginal, moderate, serious, severe, or extreme as a function of deviation from standards. Each standard has a different definition, or ‘form’ of what constitutes attainment, based on specific air quality statistics. For example, the federal 8-hour CO standard is not to be exceeded more than once per year; therefore, an area is in attainment of the CO standard if no more than one 8-hour ambient air monitoring values exceeds the threshold per year. In contrast, the federal annual PM<sub>2.5</sub> standard is met if the three-year average of the annual average PM<sub>2.5</sub> concentration is less than or equal to the standard. Table 3, *South Coast Air Basin Attainment Status*, lists the attainment status for the criteria pollutants in the basin.

### **Regional Setting**

The project site is located within the unincorporated community of Crestline in San Bernardino County, which is part of the South Coast Air Basin (SCAB) that includes all of Orange County as well as the non-desert portions of Los Angeles, Riverside, and San Bernardino counties. The SCAB is located on a coastal plain with connecting broad valleys and low hills to the east. Regionally, the SCAB is bounded by the Pacific Ocean to the southwest and high mountains to the east forming the inland perimeter.

### ***Local Air Quality***

The Project site is located within the Source Receptor Area (SRA) 37. Within SRA 37, the SCAQMD Central San Bernardino Mountain monitoring station is located 0.87 miles south of the Project site and is the nearest long-term air quality monitoring site for O<sub>3</sub> and PM<sub>10</sub>. Relative to the Project site, the SCAQMD Central San Bernardino Valley 1 monitoring station (located in SRA 34) is the nearest monitoring station, located approximately 9.79 miles south of the Project site, that monitors CO, NO<sub>2</sub>, and PM<sub>2.5</sub>. It should be noted that the Central San Bernardino Valley 1 monitoring station was utilized in lieu of the Central San Bernardino Mountain monitoring station only in instances where data was not available from the Central San Bernardino Mountain site.

The most recent three (3) years of data available is shown on Table 4 and identifies the number of days ambient air quality standards were exceeded for the study area, which is considered to be representative of the local air quality at the Project site. Data for O<sub>3</sub>, CO, NO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> for 2016 through 2018 was obtained from the SCAQMD Air Quality Data Tables. Additionally, data for SO<sub>2</sub> has been omitted as attainment is regularly met in the SCAB and few monitoring stations measure SO<sub>2</sub> concentrations.

**Table 3**  
**South Coast Air Basin Attainment Status**

Pollutant	Averaging Time	National Standards <sup>1</sup>	Attainment Date <sup>2</sup>	California Standards <sup>3</sup>
1979 1-Hour Ozone <sup>4</sup>	1-Hour (0.12 ppm)	Nonattainment (Extreme)	2/26/2023 (revised deadline <sup>4</sup> )	Extreme Nonattainment
1997 8-Hour Ozone <sup>5</sup>	8-Hour (0.08 ppm)	Nonattainment (Extreme)	6/15/2024	Nonattainment
2008 8-Hour Ozone	8-Hour (0.075 ppm)	Nonattainment (Extreme)	7/20/2032	
2015 8-Hour Ozone	8-Hour (0.070 ppm)	Pending - Expect Nonattainment	Pending (beyond 2032)	
CO	1-Hour (35 ppm) 8-Hour (9 ppm)	Attainment (Maintenance)	6/11/2007 (Attained)	Maintenance
NO <sub>2</sub> <sup>6</sup>	1-Hour (100 ppb) Annual (0.053 ppm)	Attainment (Maintenance)	9/22/1998 (Attained)	Attainment
SO <sub>2</sub> <sup>7</sup>	1-Hour (75 ppb)	Designations Pending	Pending	Attainment
	24-Hour (0.14 ppm) Annual (0.03 ppm)	Unclassifiable/ Attainment	3/19/1979 (Attained)	
PM <sub>10</sub>	24-Hour (150 µg/m <sup>3</sup> )	Attainment (Maintenance)	7/26/2013 (Attained) <sup>8</sup>	Nonattainment
PM <sub>2.5</sub>	24-Hour (35 µg/m <sup>3</sup> )	Nonattainment (Serious)	12/31/2019	Unclassified
Lead	3-Months Rolling (0.15 µg/m <sup>3</sup> )	Nonattainment (Partial) <sup>9</sup>	12/31/2015	Nonattainment (Partial) <sup>9</sup>

Source: \_\_\_\_\_

Notes:

1. Obtained from Draft 2016 AQMP, SCAQMD, 2016. EPA often only declares Nonattainment areas; everywhere else is listed as Unclassified/Attainment or Unclassifiable.
2. A design value below the NAAQS for data through the full year or smog season prior to the attainment date is typically required for attainment demonstration.
3. Obtained from <http://www.arb.ca.gov/design/adm/adm.htm>.
4. 1-hour O<sub>3</sub> standard (0.13 ppm) was revoked, effective June 15, 2005; however, the Basin has not attained this standard based on 2008-2010 data has some continuing obligations under the former standard.
5. 1997 8-hour O<sub>3</sub> standard (0.08 ppm) was reduced (0.075 ppm), effective May 27, 2008; the 1997 O<sub>3</sub> standard and most related implementation rules remain in place until the 1997 standard is revoked by U.S. EPA.
6. New NO<sub>2</sub> 1-hour standard, effective August 2, 2010; attainment designations June 2013; annual NO<sub>2</sub> standard retained.
7. The 1971 annual and 24-hour SO<sub>2</sub> standards were revoked, effective August 23, 2010; however, these 1971 standards will remain in effect until one year after U.S. EPA promulgates area designations for the 2010 SO<sub>2</sub> 1-hour standard. Area designations expected in 2012, with SSAB designated Unclassifiable/Attainment.
8. The 1971 annual and 24-hour SO<sub>2</sub> standards were revoked, effective August 23, 2010; however, these 1971 standards will remain in effect until one year after U.S. EPA promulgates area designations for the 2010 SO<sub>2</sub> 1-hour standard. Area designations expected in 2012, with SSAB designated Unclassifiable/Attainment.
9. Partial Nonattainment designation - Los Angeles County portion of Basin only.

**Table 4**  
**Local Area Air Quality Levels from the San Bernardino Monitoring Station**

POLLUTANT	STANDARD	YEAR		
		2016	2017	2018
O <sub>3</sub>				
Maximum Federal 1-Hour Concentration (ppm)		0.163	0.146	0.142
Maximum Federal 8-Hour Concentration (ppm)		0.121	0.121	0.125
Number of Days Exceeding Federal 1-Hour Standard	>0.07 ppm	9	11	3
Number of Days Exceeding State 1-Hour Standard	> 0.09 ppm	64	76	57
Number of Days Exceeding Federal 8-Hour Standard	> 0.070 ppm	101	110	113
Number of Days Exceeding State 8-Hour Standard	> 0.070 ppm	103	110	113
CO				
Maximum Federal 1-Hour Concentration	> 35 ppm	1.7	1.6	1.9
Maximum Federal 8-Hour Concentration	> 20 ppm	1.0	1.3	1.1
NO <sub>2</sub>				
Maximum Federal 1-Hour Concentration	> 0.100 ppm	0.07	0.07	0.06
Annual Federal Standard Design Value		0.02	0.02	0.02
PM <sub>10</sub>				
Maximum Federal 24-Hour Concentration (µg/m³)	> 150 µg/m³	46	56	78
Annual Federal Arithmetic Mean (µg/m³)		17.1	17.6	19.5
Number of Days Exceeding Federal 24-Hour Standard	> 150 µg/m³	0	0	0
Number of Days Exceeding State 24-Hour Standard	> 50 µg/m³	0	2	1
PM <sub>2.5</sub>				
Maximum Federal 24-Hour Concentration (µg/m³)	> 35 µg/m³	30.45	39.20	29.20
Annual Federal Arithmetic Mean (µg/m³)	> 12 µg/m³	12.04	12.04	11.13
Number of Days Exceeding Federal 24-Hour Standard	> 35 µg/m³	0	1	0

Source: Data for O<sub>3</sub>, CO, NO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> was obtained from SCAQMD Air Quality Data Tables.

### Project Emissions Assumptions

Construction activities associated with the Project will result in emissions of VOCs, NO<sub>x</sub>, SO<sub>x</sub>, CO, PM<sub>10</sub>, and PM<sub>2.5</sub>. Construction related emissions are expected from earthwork (excavation, compaction, soil import/export, slope grading and filling), delivery of structural materials, and pouring of concrete and paving activities.

### Grading Activities

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

phase of activity. Based on information provided by the Project applicant, the Project is expected to require 2,050 cubic yards (CY) of export. For purposes of analysis the CalEEMod default trip length for hauling activities of 20 miles has been used as a typical distance for off-site transport of materials.

#### Construction Worker Vehicle Trips

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

#### Construction Duration

Construction is expected to in 2020 and will last for a duration of 24 months. For purposes of analysis, construction is expected to commence in March 2020 and will last through March 2022. Construction duration utilized in the analysis represents a “worst-case” analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as time passes and the analysis year increases due to emission regulations becoming more stringent.

#### Construction Equipment

The associated construction equipment is shown on Table 5 and is based on information provided by the CSD.

**Table 5**  
**Construction Equipment**

<b>Equipment</b>	<b>Equipment Name in CalEEMod</b>	<b>Amount</b>	<b>Duration</b>
Tractor/Loader/Backhoe	Tractor/Loader/Backhoe	2	24 months
Excavator	Excavator	1	24 months
Dump Truck/Hauling Truck	Dumpers/Tenders	10	6 months
Delivery Truck	Off-Highway Trucks	1	24 months
Asphalt Paver	Pavers	1	5 days
Steel Wheel Roller	Rollers	1	5 days
Concrete Mixer Truck	Cement and Mortar Mixers	3	10 days
Concrete Boom Pump Truck	Other Construction Equip.	1	10 days
Truck Mounted Boom Crane	Cranes	1	10 days
Excavator with Pile Driver	Excavators	1	5 days
Bypass Pump	Pump	2	30 days
Generator	Generator Set	1	6 months

It should be noted that site specific construction fleet may vary due to specific project needs at the time of construction. As a conservative measure, the construction equipment was modeled under the assumption that each equipment would operate for up to 8 hours per day during an approximate 24-month construction period, excluding nights, holidays and weekends.

The duration of construction activity and associated equipment represents a reasonable approximation of the expected construction fleet as required per CEQA Guidelines. The duration of construction activity was based on information provided by the Project applicant and the 2022 opening year.

#### Maximum Daily Disturbed-Acreage

The “acres disturbed” for analytical purposes are based on specific equipment type for each subcategory of construction activity and the estimated maximum area a given piece of equipment can pass over in an 8-hour workday (Appendix A, Table 3-5). The equipment-specific disturbance rates were obtained from the CalEEMod user’s guide, *Appendix A: Calculation Details for CalEEMod* (October 2017). It should be noted that the disturbed area per day is representative of a piece of equipment making multiple passes over the same land area. In other words, one Rubber Tired Dozer can make multiple passes over the same land area totaling 0.5 acres in a given 8-hour day. Additionally, although *Appendix A* only identifies equipment-specific grading rates for crawler tractors, graders, rubber tired dozers, and scrapers, it is assumed that tractor/loader/backhoe equipment could also be used to grade the Project site and would disturb approximately 0.5 acres per 8-hour day. Based on Table 6, the proposed Project could actively disturb approximately 1.0 acre per day.

**Table 6**  
**Maximum Daily Disturbed Acreage**

<b>Equipment Type</b>	<b>Equipment Quantity</b>	<b>Acres graded per 8-hour day</b>	<b>Operating Hours per Day</b>	<b>Acres graded per day</b>
Tractor/Loader/Backhoe	2	0.5	8	1.0
Total acres disturbed per day				1.0

#### Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardio-respiratory diseases.

Residential areas are also considered to be sensitive receptors to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Other sensitive receptors include retirement facilities, hospitals, and schools. Recreational land uses are considered moderately sensitive to air pollution. Although exposure periods are generally short, exercise places a high demand on respiratory functions, which can be impaired by air pollution. In addition, noticeable air pollution can detract from the enjoyment of recreation. Industrial and commercial areas are considered the least sensitive to air pollution. Exposure periods are relatively short and intermittent, as the majority of the workers tend to stay indoors most of the time. In addition, the working population is generally the healthiest segment of the public.

The SCAQMD recommends that the nearest sensitive receptor be considered when determining the Project’s potential to cause an individual and cumulatively significant impact. The nearest sensitive receptor is a residential home located roughly 883 feet/269 meters from the Project site on Zermatt Drive. For purposes of analysis, the 269-meter receptor distance is utilized as a screening threshold to determine LSTs for emissions of NO<sub>x</sub>, CO, PM<sub>10</sub>, and PM<sub>2.5</sub>.

## **Impact Analysis**

### *a) Conflict with or obstruct implementation of the applicable air quality plan?*

**Less Than Significant.** CEQA requires a discussion of any inconsistencies between a proposed project and applicable general plans and regional plans (CEQA Guidelines Section 15125). The applicable air quality plan is the SCAQMD 2016 Air Quality Management Plan (AQMP). The AQMP is a regional blueprint for achieving air quality standards and healthful air. Conflicts with the AQMP would arise if Project activities result in a substantial increase in employment or population that was not previously adopted and/or approved in a General Plan. Large population or employment increases could affect transportation control strategies, which are among the most important in the air quality plan, since transportation is a major contributor to particulates and ozone for which the South Coast Air Basin (SCAB) is not in attainment.

The CSD is proposing to upgrade its existing wastewater treatment plant by adding a primary clarifier, backup generator, trickling filter recirculation pumps, and a sludge dewatering building with associated sludge dewatering and conveyance equipment (proposed Project) on its existing site. Construction is estimated to occur in approximately 2020 and last approximately 24 months. The existing facilities in the proposed project area were constructed in 1952 (e.g. primary clarifiers) and 1984 (e.g. sludge handling facility). These facilities are reaching the end of their serviceable life, and are not designed to meet current engineering standards and community wastewater treatment demands. The Project does not involve and increase in transportation or population, therefore, the Project is not conflict with any air quality plan, and the impact is less than significant.

### *b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?*

**Less Than Significant.** As previously shown in Table 3, the Project area is designated as a non-attainment area for ozone, PM<sub>10</sub>, and PM<sub>2.5</sub>.

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

*...the AQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or Environmental Impact Report (EIR). The only case where the significance thresholds for project specific and cumulative impacts differ is the Hazard Index (HI) significance threshold for toxic air contaminant (TAC) emissions. The project specific (project increment) significance threshold is HI > 1.0 while the cumulative (facility-wide) is HI > 3.0. It should be noted that the HI is only one of three TAC emission significance thresholds considered (when applicable) in a CEQA analysis. The other two are the maximum individual cancer risk (MICR) and the cancer burden, both of which use the same significance thresholds (MICR of 10 in 1 million and cancer burden of 0.5) for project specific and cumulative impacts.*

*Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant.*

This analysis identifies that individual projects that do not generate operational or construction emissions that exceed the SCAQMD's recommended daily thresholds for project-specific impacts would also not cause a



cumulatively considerable increase in emissions for those pollutants for which the Basin is in nonattainment. Therefore, the individual project would not be considered to have a significant, adverse air quality impact. Alternatively, individual project-related construction and operational emissions that exceed SCAQMD thresholds for project-specific impacts would be considered cumulatively considerable.

#### Construction Impacts

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

#### Operational Impacts

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

#### *Compliance with SCAQMD Rules 402 and 403*

Although the proposed project does not exceed SCAQMD thresholds during construction activities, the CSD and or its contractor is required to comply with all applicable SCAQMD rules and regulations as the SCAB is in non-attainment status for ozone and suspended particulates (PM<sub>10</sub>). The project shall comply with, Rules 402 nuisance, and 403 fugitive dust, which require the implementation of Best Available Control Measures (BACM) for each fugitive dust source; and the Air Quality Management Plan (AMCP), which identifies Best Available Control Technologies (BACT) for area sources and point sources, respectively.

Exhaust emissions from construction vehicles and equipment and fugitive dust generated by equipment traveling over exposed surfaces would increase NO<sub>x</sub> and PM<sub>10</sub> levels in the area. Although the proposed project does not exceed SCAQMD thresholds during construction, the CSD and its contractor will be required to implement the following conditions as required by SCAQMD:

1. To reduce emissions, all equipment used in earthwork must be tuned and maintained to the manufacturer's specification to maximize efficient burning of vehicle fuel.
2. The project proponent shall ensure that construction personnel are informed of ride sharing and transit opportunities.
3. The operator shall maintain and effectively utilize and schedule on-site equipment in order to minimize exhaust emissions from truck idling.
4. The operator shall comply with all existing and future CARB and SCAQMD regulations related to diesel-fueled trucks.

Implementation of the Project does not exceed the SCAQMD significance thresholds for construction activities. Although there would be emissions from vehicles and equipment during Project construction, the emissions would be temporary, of short duration, and below the established thresholds. In addition, Project emissions of particulate matter would be reduced by implementing BACMs as outlined in SCAQMD dust control Rules 402 - Nuisance and 403 - Fugitive Dust. The Project would not generate long-term emissions of criteria pollutants that would exceed thresholds and would therefore not cause a cumulatively considerable increase in criteria pollutants. A less than significant impact is identified, and no mitigation measures are proposed.

*c) Expose sensitive receptors to substantial pollutant concentrations?*

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

Results of the LST analysis indicate that the Project would not exceed the SCAQMD localized significance thresholds during construction activity. Further Project traffic would not create or result in a CO “hotspot.” Therefore, sensitive receptors would not be exposed to substantial pollutant concentrations as the result of Project construction.

*d) Result in other emissions (such as those leading to odors adversely affecting a substantial number of people?)*

**Less Than Significant.** Operation of the wastewater treatment plant (WWTP) has the potential to result in odor impacts because of the nature of the activities at the proposed facility. However, the frequency with which the facility would expose the public to objectionable odors would be minimal based on the control measures planned in the design. All WWTP facilities would be covered to avoid uncontrolled odor release. Active odor control units would be located to manage gases from the wet and solids stream treatment processes. All processes and equipment would be housed (or otherwise contained) and ventilation controlled such that no objectionable odors would be discernible at the Project site boundaries.

Odors are typically associated with particular steps in the wastewater treatment process. Initially, raw wastewater is transferred to the primary clarifiers where most solids are separated from the liquid portion of wastewater in the treatment process. A ferrous chloride solution is added to the raw wastewater before it enters the primary clarifiers to reduce odors at that treatment stage. Ferrous chloride molecules capture hydrogen sulfide molecules, forming insoluble compounds that precipitate out of the waste stream.

Wastewater undergoing aerobic digestion (decomposition with free oxygen) in the aeration basins emits a characteristically musty odor due to the particular type of biogases released in the process. A misting system with odor neutralizing liquids breaks down the foul-smelling chemical compounds in the biogases. Chlorine gas is used to disinfect the non-potable water, which is used daily to wash down all areas of the plant.

Bio filters remove odor by capturing the odor causing compounds in a media bed where they are oxidized by naturally occurring micro-organisms. Wastewater operators routinely check the digester pressure relief valves to make sure they are not venting to the outdoors and that the waste gas burner is performing optimally.

Facilities that cause nuisance odors are subject to enforcement action by the SCAQMD. The SCAQMD responds to odor complaints by investigating the complaint determining whether the odor violated SCAQMD Rule 402 (South Coast Air Quality Management District). The inspector will take enforcement action if the source is not in compliance with SCAQMD rules and regulations and will inform the complainant of investigation results. In the event of enforcement action, odor-causing impacts must be mitigated by appropriate means to reduce the impacts to sensitive receptors. Such means include shutdown of odor sources or requirements to control odors using add-on equipment.

The odor control design for the facility would be such that no perceptible odors would be detected by nearby residences or other sensitive receptors. Additionally, disposal of biosolids at landfill sites could also contribute to odors and increase air emissions at these end-use facilities. However, the County would only allow facilities that have addressed all site-specific impacts. Therefore, this impact would be less than significant.

**Mitigation Measures:**

No mitigation measures are required.

**Impact Conclusions:**

No significant adverse impacts are identified or anticipated, and no mitigation measures are required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>IV. BIOLOGICAL RESOURCES:</b> Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?			X	
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?				X
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				X
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?		X		
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				X

**SUBSTANTIATION:** (☐ Check if project is located in the Biological Resources Overlay or Contains habitat for any species listed in the California Natural Diversity Database):

A biological resources assessment was prepared by Jericho Systems in June 2019 and is provided in Appendix B.

### **Regulatory Setting**

#### ***Federal Endangered Species Act (ESA)***

The USFWS administers the federal ESA of 1973. The ESA provides a legal mechanism for listing species as either threatened or endangered, and a process of protection for those species listed. Section 9 of the ESA prohibits "take" of threatened or endangered species. The term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in such conduct. "Take" can include adverse modification of habitats used by a threatened or endangered species during any portion of its life history. Under the regulations of the ESA,

the USFWS may authorize "take" when it is incidental to, but not the purpose of, an otherwise lawful act. Take authorization can be obtained under Section 7 or Section 10 of the act.

No federally listed species were observed during the field survey nor are any expected to occur. No impact to federally protected species or habitats will result from implementation of the proposed Project.

### ***California Endangered Species Act (CESA)***

The CDFW administers the State CESA. The State of California considers an endangered species one whose prospects of survival and reproduction are in immediate jeopardy. A threatened species is one present in such small numbers throughout its range that it is likely to become an endangered species soon, in the absence of special protection or management. And a rare species is one present in such small numbers throughout its range that it may become endangered if its present environment worsens. Rare species applies to California native plants. Further, all raptors and their nests are protected under Section 3503.5 of the California Fish and Game Code (FGC). Species of Special Concern (SSC) is an informal designation used by CDFW for some declining wildlife species that are not proposed for listing as threatened or endangered. This designation does not provide legal protection but signifies that these species are recognized as sensitive by CDFW.

No State listed species, or other sensitive species were observed during the field survey nor are any expected to occur. No impact to species protected by the State will result from implementation of the proposed Project.

### ***Migratory Bird Treaty Act (MBTA)***

The federal Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C 703-711) provides protection for nesting birds that are both residents and migrants whether or not they are considered sensitive by resource agencies. The MBTA prohibits take of nearly all native birds. The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed under 50 CFR 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). The direct injury or death of a migratory bird, due to construction activities or other construction-related disturbance that causes nest abandonment, nestling abandonment, or forced fledging would be considered take under federal law. The USFWS, in coordination with the CDFW administers the MBTA. CDFW's authoritative nexus to MBTA is provided in FGC Sections 3503.5 which protects all birds of prey and their nests and FGC Section 3800 which protects all non-game birds that occur naturally in the State.

### **Environmental Setting**

The Project site is located in the unincorporated San Bernardino County mountain community of Crestline. Improvements will occur within the grounds of the existing Huston Creek Wastewater Treatment Plant, which is situated approximately 2,700 feet north of the Crestline Sanitation office, located at 24516 Lake Drive, Crestline, CA 92325 (Figure 1 and 2). The Project site can be found on *Silverwood Lake* USGS 7.5' quadrangle, Township 2 North, Range 4 West, Section 14 at approximately latitude 34.25424, longitude -117.27056. There is no commercial or residential development adjacent to the project. The closest residences are approximately 1,000 feet to the southwest along Zermatt Drive, and approximately 1,700 feet to the east at the end of Orchard Road.

According to the U.S. EPA Regional map, the Project site is located in the Southern California Mountains Ecoregion. An Ecoregion is a regional area that has similar ecosystems in terms of type, quality, and quantity of environmental resources. The Southern California Mountains Ecoregion consists of several coastal mountain ranges. From northwest to southeast, these are the Santa Ynez Mountains, the Tehachapi Mountains, the San Gabriel Mountains, the San Bernardino Mountains, the San Jacinto Mountains, and the Santa Rosa Mountains.

The June 2019 field survey (Appendix B) identified that all vegetation within existing fence line consists of lawn grass maintained by landscaping with scattered annuals along the edges. All other disturbance to vegetation will be limited to trimming branches overhanging the fence line; these species include California black oak (*Quercus kelloggii*) and yellow pine (*Pinus ponderosa*).

Wildlife observed within the existing treatment plant included house sparrow (*Passer domesticus*), lesser goldfinch (*Spinus psaltria*), black phoebe (*Sayornis nigricans*), and house finch (*Haemorhous mexicanus*).

No State- and/or federally-listed threatened or endangered species, or other sensitive species were observed on site during the June 2019 field survey.

### ***Sensitive Species***

The biological resources study (Appendix B) included wildlife database queries from various State and federal relevant databases for the *Silverwood Lake* and *Lake Arrowhead* USGS quadrangles. The results identified listed 58 sensitive species (18 vertebrates, 5 invertebrates, and 35 plant species) and 1 sensitive habitat in the *Silverwood Lake* and *Lake Arrowhead* USGS quadrangles.

Of the State- and/or federally-listed species documented within the *Silverwood* and *Lake Arrowhead*, quads, the following have been documented in the project vicinity (within approximately 3 miles) of the Project site:

- Southern rubber boa (*Charina umbratica*)
- Bald eagle (*Haliaeetus leucocephalus*)
- Arroyo toad (*Anaxyrus californicus*)
- Southern mountain yellow-legged frog (*Rana draytonii*)

Although not State- or federally-listed species, California spotted owl (*Strix o. occidentalis*) and San Bernardino flying squirrel (*Glaucomys sabrinus californicus*) are CDFW SSC and are considered particularly sensitive species within the region. Furthermore, these species have been documented within a few miles of the project site. Therefore, California spotted owl and San Bernardino flying squirrel will be included in the discussion below.

There is no habitat on site or near the site for the Arroyo toad or Southern mountain yellow-legged frog, therefore, these species will not be discussed below.

### ***Southern rubber boa – Threatened (State)***

The State-listed as threatened southern rubber boa (rubber boa) is a small, rather stout-bodied snake with smooth scales and a blunt head and tail. Rubber boas are primarily fossorial and are rarely encountered on the surface, except on days and nights of high humidity and overcast sky. During warm months, it is active at night and on overcast days. It hibernates during winter, usually in crevices in rocky outcrops. Other potential hibernacula may be rotting stumps. Typical habitat for this species is mixed conifer-oak forest or woodland dominated by two or more of the following species: Jeffrey pine (*Pinus jeffreyi*), yellow pine (*P. ponderosa*), sugar pine (*P. lambertiana*), incense cedar (*Calocedrus decurrens*), white fir (*Abies concolor*), and black oak (*Quercus kelloggii*). Rubber boas are usually found near streams or wet meadows or within or under surface objects with good moisture retaining properties such as rotting logs (CDFW 2014).

Rubber boa have been documented within one mile of the project site in Sky forest as well as within Little Bear Creek and Dogwood Creek. The Little Bear Creek and Dogwood Creek occurrences likely represent movement

corridors for this species. In addition to the Little Bear Creek and Dogwood Creek occurrences, there are 90 rubber boa occurrences documented within approximately 5 miles of the subject parcel (CDFW pers. comm.).

The biological report (Appendix B) was determined not provide habitat suitable to support rubber boa; however, adjacent habitat is potentially suitable. There is low potential for southern rubber boa to occur within the Project site, as it is an existing waste water treatment plant. Should the area of impact extend beyond the existing fence line, measures to avoid southern rubber boa may be warranted, such as a pre-construction survey.

*Bald eagle – Delisted (Federal)/ Endangered (State).*

The bald eagle (BAEA) was a federally-listed species until 2007 when it was delisted because of the increase in population. However, it remains a State-listed endangered species and is covered under the Migratory Bird Treaty Act (MBTA). BAEA are distinguished by a white head and white tail feathers, are powerful, brown birds that may weigh 14 pounds and have a wingspan of 8 feet. Male eagles are smaller, weighing as much as 10 pounds and have a wingspan of 6 feet. Sometimes confused with Golden Eagles, BAEA are mostly dark brown until they are four to five years old and acquire their characteristic coloring. They live near rivers, lakes, and marshes where they can find fish, their staple food. BAEA will also feed on waterfowl, turtles, rabbits, snakes, and other small animals and carrion. BAEA require a good food base, perching areas, and nesting sites. Their habitat includes estuaries, large lakes, reservoirs, rivers, and some seacoasts (CDFW 2016). In winter, the birds congregate near open water in tall trees for spotting prey and night roosts for sheltering (CDFW 1999). They mate for life, choosing the tops of large trees to build nests, which they typically use and enlarge each year. In most of California, the breeding season lasts from about January through July or August (CDFW 2016). Nests may reach 10 feet across and weigh a half ton. They may also have one or more alternate nests within their breeding territory (CDFW 2016). The young eagles are flying within three months and are on their own about a month later.

The U.S. Forest Service conducts annual surveys for BAEA in the San Bernardino Mountains. Migrating BAEA have long been documented to overwinter in the San Bernardino Mountains, including at nearby Lake Arrowhead. The wintering period for migrating BAEA in the San Bernardino Mountains is generally December through March, with the first eagles arriving in mid-November and the last eagles leaving in early April. The highest numbers of wintering eagles in the area is in January and early February.

The project is not within or adjacent any suitable BAEA foraging or nesting habitat. The nearest recorded occurrence for this species is east of Tunnel Ridge, which is approximately 1.3 miles northeast of the project site. Therefore, the proposed project is not likely to impact BAEA and no further investigation relative to this species is warranted or required.

*California spotted owl – SSC*

The California spotted owl (SPOW) is considered a SSC by the CDFW and is listed as a Sensitive Species by the U.S. Forest Service. The SPOW breeds and roosts in forests and woodlands with large old trees and snags, high basal areas of trees and snags, dense canopies ( $\geq 70\%$  canopy closure), multiple canopy layers, and downed woody debris. Large, old trees are the key component; they provide nest sites and cover from inclement weather and add structure to the forest canopy and woody debris to the forest floor. These characteristics typify old-growth or late-seral-stage habitats. Because the SPOW selects stands that have higher structural diversity and significantly more large trees than those generally available, it is considered a habitat specialist. In southern California, SPOW principally occupy montane hardwood and montane hard-wood-conifer forests, especially those with canyon live oak (*Quercus chrysolepis*) and bigcone Douglas-fir (*Pseudotsuga macrocarpa*), at mid- to high elevations (Davis and Gould 2008).

SPOW prey on small mammals, particularly dusky-footed woodrats (*Neotoma fuscipes*) at lower elevations (oak woodlands and riparian forests) and throughout southern California. The SPOW breeding season occurs from early spring to late summer or fall. Breeding spotted owls begin pre-laying behaviors, such as preening and roosting together, in February or March and juvenile owl dispersal likely occurs in September and October (Meyer 2007). The SPOW does not build its own nest but depends on finding suitable, naturally occurring sites in tree cavities or on broken-topped trees or snags, on abandoned raptor or common raven (*Corvus corax*) nests, squirrel nests, dwarf mistletoe (*Arceuthobium* spp.) brooms, or debris accumulations in trees. In the San Bernardino Mountains, platform nests predominate (59%) and were in trees with an average diameter at breast height (dbh) of 75 cm, whereas cavity nest trees and broken-top nest trees were significantly larger (mean dbh of 108.3 cm and 122.3 cm, respectively) (LaHaye et al. 1997, as cited in Davis and Gould 2008).

According to LaHaye and Gutierrez (2005), urbanization in the form of primary and vacation homes has degraded or consumed some forest in most mountain ranges. The results of spotted owl surveys conducted between 1987 and 1998 in the San Bernardino Mountains indicated that a large area of potentially-suitable spotted owl habitat, enough to support 10-15 pairs, existed between Running Springs and Crestline (LaHaye and others 1999, as cited in LaHaye and Gutierrez 2005). However, only four pairs have been found in this area, and owls were found only in undeveloped sites. Thus, residential development within montane forests may preclude spotted owl occupancy, even when closed-canopy forest remains on developed sites (LaHaye and Gutierrez 2005).

Per the CNDDDB Spotted Owl Observations Database (2019), the nearest documented SPOW activity center (roosting or nesting site) is approximately 0.1 mile northeast of the project site. Some of the area surrounding the project site does provide habitat suitable to support SPOW. However, the project site is within an area subject to ongoing human disturbances associated with the existing wastewater treatment plant in the area for a long time. Therefore, it is unlikely that the project site and immediate surrounding area would be utilized by SPOW for nesting or roosting, even though the basic habitat requirements for this species are present within the project area. Furthermore, this species has not been documented within the project area. Although the U.S. Forest Service does not survey for SPOW on private property, the surrounding San Bernardino National Forest areas have been surveyed extensively by the Forest Service since the late 1980s. For the reasons discussed, the project area is most likely not occupied by SPOW and the proposed project is not likely to impact this species.

However, although the habitat within the project area is not likely to support SPOW, preconstruction Nesting Bird Surveys (NBS) should be conducted prior to the commencement of any project activities that may occur within the nesting bird season (typically February – September), to avoid any potential project-related impacts to SPOW as well as any other potential nesting birds within the project area.

#### *San Bernardino flying squirrel – SSC*

The San Bernardino flying squirrel (flying squirrel) is considered a SSC by the CDFW and is listed as a Sensitive Species by the U.S. Forest Service. The flying squirrel is a nocturnally active, arboreal squirrel that is distinguished by the furred membranes extending from wrist to ankle that allow squirrels to glide through the air between trees at distances up to 91 meters (300 feet) (Wolf 2010). The San Bernardino flying squirrel is the most southerly distributed subspecies of northern flying squirrel (*Glaucomys sabrinus*). It inhabits high-elevation mixed conifer forests comprised of white fir, Jeffrey pine, and black oak between ~4,000 to 8,500 feet. It has specific habitat requirements that include associations with mature forests, large trees and snags, closed canopy, downed woody debris, and riparian areas, and it is sensitive to habitat fragmentation.

The Flying Squirrels of Southern California is a project of the San Diego Natural History Museum (SDNHM), in collaboration with the U.S. Forest Service and the USFWS, to try to determine the distribution and habitat use of the flying squirrel in southern California. Per the SDNHM database, the nearest documented flying squirrel occurrence (2015) is approximately 0.7 miles northeast of the project site, within a residential neighborhood.



The surrounding area does provide habitat suitable to support flying squirrel. The habitat consists of mixed conifer-oak forest with large trees and snags, downed woody debris, and adjacent riparian habitat. Furthermore, this species has been documented within approximately 0.7 mile of the project site, in similar mixed conifer-oak forest habitat. Therefore, the habitat in the surrounding vicinity is suitable to support flying squirrel and the proposed Project could potentially result in indirect noise impacts to this species. However, the existing facility has been in existence for several decades, and most of the improvements will occur within the existing fence line. Therefore, potential direct impacts to flying squirrel that may potentially result from the project are not likely.

### *Nesting Birds*

Vegetation suitable for nesting birds does exist adjacent to the Project area. Bird nesting season generally extends in southern California from March 1 through September 1 for migratory birds. To avoid impacts to nesting birds (common and special status) during the nesting season, a qualified Avian Biologist should conduct pre-construction Nesting Bird Surveys prior to project-related disturbance to nestable vegetation to identify any active nests. If no active nests are found, no further action will be required. If an active nest is found, the biologist would set appropriate no-work buffers around the nest based upon the nesting species, its sensitivity to disturbance, nesting stage and expected types, intensity and duration of disturbance. The nests and buffer zones would field checked as appropriate by the biologist. The no-work buffer zone would remain until the biologist has determined the young birds have successfully fledged and the nest is inactive.

### *Jurisdiction Waters*

All water on site is contained within the treatment facility. The site is landscaped, and no signs of surface flow, banks, beds, or channels are evident throughout the project vicinity. No hydric vegetation, hydric soils, and/or wetland hydrology are present in any segment of the Project site.

### **Impact Analysis**

- a) *Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?*

**Less Than Significant.** The proposed Project will not affect State or federally listed endangered, threatened species because there is no habitat to support these species within, adjacent to, or in the broader vicinity of the Project area. In addition, the proposed Project will not adversely affect Critical Habitat as none exists within the Project area.

- b) *Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?*

**No Impact.** All vegetation within existing fence line consists of lawn grass maintained by landscaping with scattered annuals along the edges. All other disturbance to vegetation will be limited to trimming branches overhanging the fence line; these species include California black oak (*Quercus kelloggii*) and yellow pine (*Pinus ponderosa*).

- c) *Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?*

**No Impact.** All water on site is contained within the treatment facility. The site is landscaped, and no signs of surface flow, banks, beds, or channels are evident throughout the Project vicinity. No hydric vegetation, hydric soils, and/or wetland hydrology are present in any area of the Project site. There are no wetlands or wetland vegetation or federally-protected wetlands in the Project area or within the existing facility. There will be no impact.

*d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?*

**Less Than Significant With Mitigation Incorporated.** There are no established native resident or migratory wildlife corridors or wildlife nursery sites. However, vegetation bordering and within the Project area has the potential to support nesting birds and migratory birds protected under the MBTA. Therefore, to reduce potential impacts to nesting birds **Mitigation Measure BIO-1** is recommended. Mitigation measures are at the end of this section.

*e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?*

**No Impact.** The Project does not propose to remove trees, and there are no local policies or ordinances that protect biological resources as they relate to the Project activities. Therefore, there is no impact

*f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?*

**No Impact.** The Project does not conflict with any Habitat Conservation Plan or Natural Community Conservation Plan or other approved local, regional or state plan. Therefore, there is no impact.

### **Mitigation Measures:**

- BIO 1** Bird nesting season generally extends from February 1 through September 15 in southern California and specifically, April 15 through August 31 for migratory passerine birds. To avoid impacts to nesting birds (common and special status) during the nesting season (February 1 through September 15), a qualified Avian Biologist will conduct pre-construction Nesting Bird Surveys (NBS) at least five calendar days prior to project-related disturbance to nestable vegetation to identify any active nests. If no active nests are found, no further action will be required. If an active nest is found, the biologist will set appropriate no-work buffers around the nest which will be based upon the nesting species, its sensitivity to disturbance, nesting stage and expected types, intensity and duration of disturbance. The nests and buffer zones shall be field checked weekly by a qualified biological monitor. The approved no-work buffer zone shall be clearly marked in the field, within which no disturbance activity shall commence until the qualified biologist has determined the young birds have successfully fledged and the nest is inactive.

### **Impact Conclusions:**

No significant adverse effects are anticipated with the inclusion of the above mitigation measures.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>V. CULTURAL RESOURCES:</b> Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in 15064.5?			X	
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to 15064.5?		X		
c) Disturb any human remains, including those interred outside of formal cemeteries?		X		

**SUBSTANTIATION:** (Check if project is located in the Cultural ☐ or Paleontologic ☐ Resources overlays or cite results of cultural resource review)

Between June and August 2019, at the request of Jericho Systems, Inc., CRM TECH performed a cultural resources study on the site of the Huston Creek Wastewater Treatment Plant (CRM Tech, Appendix C). The subject property of the cultural study was the proposed expansion of the plant, which encompasses the entire area occupied by the existing facilities, measuring approximately 4 acres in total. The expansion project, or the undertaking, entails primarily adding a new primary clarifier, backup generator, trickling filter recirculation pumps, and a sludge dewatering building.

The Area of Potential Effect (APE) is delineated to cover the maximum extent of ground disturbance required for the undertaking, including all areas to be impacted by construction activities or by the operation of construction equipment. The vertical extent of the APE, represented by the maximum depth of excavations, will not exceed 15 feet below surface. The location of the APE is at the northern end of Huston Drive, approximately 900 feet north of Zermatt Drive, in the southwest quarter of Section 14, T2N R4W, San Bernardino Baseline and Meridian.

The CRM Tech study included a literature search at the South Central Coastal Information Center (SCCIC) and a field survey. Located on the campus of California State University, Fullerton, the SCCIC is the official cultural resource records repository for the County of San Bernardino.

## **Environmental Setting**

### ***Ethnohistoric Context***

The APE lies in the heart of the homeland of the Serrano people, which is centered in the San Bernardino Mountains. Together with that of the Vanyume people, linguistically a subgroup, the traditional territory of the Serrano also includes part of the San Gabriel Mountains, much of the San Bernardino Valley, and the Mojave River valley in the southern portion of the Mojave Desert, reaching as far east as the Cady, Bullion, Sheep Hole, and Coxcomb Mountains.

Although contact with Europeans may have occurred as early as 1771 or 1772, Spanish influence on Serrano lifeways was negligible until the 1810s, when a mission *asistencia* was established on the southern edge of Serrano territory. Between then and the end of the mission era in 1834, most of the Serrano in the western portion of their traditional territory were removed to the nearby missions. In the eastern portion, a series of punitive expeditions in 1866-1870 resulted in the death or displacement of almost all remaining Serrano population in the San Bernardino

Mountains. Today, most Serrano descendants are affiliated with the San Manuel Band of Mission Indians, the Morongo Band of Mission Indians, or the Serrano Nation of Indians.

### ***Historical Context***

In 1772, a small force of Spanish soldiers under the command of Pedro Fages, military *comandante* of Alta California, became the first Europeans to set foot in the San Bernardino Mountains, followed shortly afterwards by the famed explorer Francisco Garcés in 1776 (Beck and Haase 1974:15). During the next 70 years, however, the Spanish/Mexican colonization activities in Alta California, which concentrated predominantly in the coastal regions, left little physical impact on the San Bernardinos. Aside from occasional explorations and punitive expeditions against Indian livestock raiders, the mountainous hinterland of California remained largely beyond the attention of the missionaries, the *rancheros*, and the provincial authorities. The name “San Bernardino” was bestowed on the region in the 1810s, when the *asistencia* and an associated mission rancho were established under that name in the valley lying to the south (Lerch and Haenszel 1981).

After the U.S. annexation of Alta California in 1848, the rich resources offered by the San Bernardino Mountains brought about drastic changes, spurred by the influxes of settlers from the eastern United States. Beginning in the early 1850s, the dense forest was turned into the scene—and victim—of a booming lumber industry, which brought the first wagon roads and industrial establishments into the San Bernardino Mountains. In 1860, the discovery of gold in the Bear and Holcomb Valleys ushered in a miniature gold rush, and with it a number of mining towns with several thousand residents. Around the same time, the lush mountain range also attracted cattlemen, shepherds, and their herds, and within the next two decades gained the reputation of being the best summer grazing land in southern California. Then in 1884-1885, an even more valuable resource in arid southern California, water, became the focus of development in the San Bernardino Mountains when the Bear Valley Land and Water Company created the Big Bear Lake reservoir to ensure the success and prosperity of the Redlands colony (Appendix C).

By the 1890s, excessive logging and sheep grazing in the San Bernardino Mountains had given rise to a forest conservation movement among residents of the San Bernardino Valley to protect the watershed. The movement succeeded, in 1893, in persuading the U.S. government to create the San Bernardino Forest Reserve, later renamed the San Bernardino National Forest, and over the next few decades effectively brought an end to logging and sheep grazing in the San Bernardino Mountains (Appendix C). In the meantime, the favorable climate, enticing scenery, and the string of manmade lakes gradually propelled the resort industry to the forefront of development in the San Bernardino Mountains, burgeoning from the first commercial resort established on the shore of Big Bear Lake in 1888 (Appendix C). In 1915, the budding industry received a major boost from the completion of the automobile highway known as Rim of the World Drive (Appendix C). Since then, the San Bernardino Mountains have grown into - and remain - one of southern California’s most popular tourist attractions.

### **Impact Analysis**

a) *Cause a substantial adverse change in the significance of a historical resource as defined in '15064.5?*

**Less Than Significant.** Outside the APE but within a one-mile radius, SCCIC records show more than 20 other previous studies on various tracts of land and linear features. In all, more than 50 percent of the land within the scope of the records search has been surveyed, resulting in the identification of nine historical/ archaeological sites, including three “pending” sites (Appendix C). All of these sites dated primarily to the historic period, and four of them consisted of features associated with the lumber industry. The other five sites included a homestead, structural remains, refuse scatters, and various infrastructure elements. None of these known sites was found in the immediate vicinity of the APE, and all of them was located at least a half-mile away.

The APE coincides with the footprint of the Huston Creek WWTP, which was originally built in 1952, during the post-WWII boom that swept across the entire United States. Public works and infrastructure improvement in response to accelerated population growth and urban/suburban development were certainly part of a pattern of events in history that helped shape American life in the second half of the 20th century. However, as one of many similar projects in the region, this modest facility does not demonstrate a unique or particularly close association with that historic theme.

Throughout the course of the Cultural Resources Study, no persons or specific events of recognized historic significance were identified in close association with the Huston Creek WWTP. Utilitarian in design and construction, none of the original or early components of the plant represents an important example of its property type or method of construction, nor are they recognized to be the examples of works by a prominent designer, builder, or engineer or for any other architectural, engineering, or aesthetic merits. As common infrastructure features from the late historic period, they hold little potential for any important historical or archaeological data.

More importantly, the Huston Creek WWTP was upgraded and expanded repeatedly in various years between 1972 and 2001, and almost all of the high-profile components of the plant today, such as the buildings and structures, are modern additions. As a result, the overall appearance of the plant as a whole is also predominantly modern in character. Due to the lack of integrity to relate to the historic period, the Huston Creek WWTP is no longer a potential candidate for listing in the National Register of Historic Places or the California Register of Historical Resources. Therefore, it does not constitute a potential “historic property”/“historical resource,” and requires no further consideration in the Section 106- and CEQA-compliance processes.

The Huston Creek WWTP is the only feature identified in the APE that dates originally to the historic period, and it has been found not to constitute a potential “historic property”/“historical resource” under Section 106 and CEQA provisions

Therefore, there is are no impacts to a historical resource.

*b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to 15064.5?*

**Less Than Significant With Mitigation Incorporated.** A recent geologic map identifies the surface formation in the project vicinity as *Mzsl*, namely “mixed granitic rocks of Silverwood Lake,” which dates to the Mesozoic Era and belong to the San Bernardino Mountains assemblage (Appendix C). Within the APE boundaries, exploratory geotechnical borings for this undertaking revealed the presence of artificial fill materials up to the depth of 13 feet below surface (Adam et al. 2019:3). Beneath the fill materials, most of the borings encountered weathered granitic bedrock, although one of them penetrated a few feet of silty sand before reaching the bedrock (Appendix C).

The ground surface in virtually the entire APE has been disturbed previously by the construction of the Huston Creek WWTP since 1952, and the geotechnical borings suggest that the disturbances extended down to the bedrock. In light of the lack of any significant amount of undisturbed native soil between the surface and the bedrock, the subsurface sediments within the vertical APE are considered to be very low in sensitivity for potentially significant archaeological deposits of prehistoric or early historic origin.

The Project area is the homeland of the Serrano people, which is centered in the San Bernardino Mountains, although there have been no documented sites within or around the Project area. Today, most Serrano descendants are affiliated with the San Manuel Band of Mission Indians, the Morongo Band of Mission Indians, or the Serrano Nation of Indians. To ensure there will be less than significant impacts to potential Native American resources, **Mitigation Measures CUL-1 and CUL-2** are required.

*c) Disturb any human remains, including those interred outside of formal cemeteries?*

**Less Than Significant With Mitigation Incorporated.** There are no known human remains within the vicinity of the project site, and no conditions exist that suggest human remains are likely to be found on the project site. It is not anticipated that implementation of the project would disturb human remains, including those interred outside of formal cemeteries. However, ground-disturbing activities, such as grading or excavation, have the potential to disturb human remains. If human remains are found, those remains would require proper treatment, in accordance with applicable laws. The Native American Graves Protection and Repatriation Act (NAGPRA) includes provisions for unclaimed and culturally unidentifiable Native American cultural items, intentional and inadvertent discovery of Native American cultural items on federal and tribal lands, and penalties for noncompliance and illegal trafficking. State of California Public Resources Health and Safety Code Section 7050.5-7055 describes the general provisions regarding human remains, including the requirements if any human remains are accidentally discovered during excavation of a site. As required by state law, the requirements and procedures set forth in Section 5097.98 of the California Public Resources Code would be implemented, including notification of the County Coroner, notification of the Native American Heritage Commission and consultation with the individual identified by the Native American Heritage Commission to be the “most likely descendant.” If human remains are found during excavation, excavation must stop in the vicinity of the find and any area that is reasonably suspected to overlie adjacent remains until the County Coroner has been called out by local law enforcement, and the remains have been investigated and appropriate recommendations have been made for the treatment and disposition of the remains.

**Mitigation Measures CUL-3** would ensure the proper management of human remains if encountered on the project site. With the implementation of **Mitigation Measures CUL-1** through **CUL-3**, impacts would be less than significant. Mitigation measures are at the end of this section.

**Mitigation Measures:**

- CUL-1** In the event that pre-contact cultural resources are discovered during project activities, all work in the immediate vicinity of the find (within a 60-foot buffer) shall cease and a qualified archaeologist meeting Secretary of Interior standards shall be hired to assess the find. Work on the other portions of the project outside of the buffered area may continue during this assessment period. Additionally, the San Manuel Band of Mission Indians Cultural Resources Department (SMBMI) shall be contacted, as detailed within Mitigation Measure TCR-1, if any such find occurs and be provided information after the archaeologist makes his/her initial assessment of the nature of the find, so as to provide Tribal input with regards to significance and treatment.
- CUL-2** If significant cultural resources, as defined by CEQA (as amended, 2015), are discovered and avoidance cannot be ensured, the archaeologist shall develop a Monitoring and Treatment Plan, the drafts of which shall be provided to SMBMI for review and comment, as detailed within TCR-1. The archaeologist shall monitor the remainder of the project and implement the Plan accordingly.
- CUL-3** If human remains or funerary objects are encountered during any activities associated with the project, work in the immediate vicinity (within a 100-foot buffer of the find) shall cease and the County Coroner shall be contacted pursuant to State Health and Safety Code §7050.5 and Public Resources Code Section 5097.98, and enforced for the duration of the project. These code provisions require notification of the County Coroner and the Native American Heritage Commission, who in turn must notify those persons believed to be most likely descended from the deceased Native American for appropriate disposition of the remains. Excavation or disturbance

may continue in other areas of the project site that are not reasonably suspected to overlie adjacent remains or archaeological resources.

**Impact Conclusions:**

No significant adverse effects are anticipated with the inclusion of the above mitigation measures.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>VI. ENERGY:</b> Would the project:				
a) Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?			X	
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?			X	

An energy analysis was performed for the Project by Urban Crossroads and is located in Appendix D. The purpose of the analysis was to ensure that energy implication is considered by the as the lead agency, and to quantify anticipated energy usage associated with construction of the proposed Project, determine if the usage amounts are efficient, typical, or wasteful for the land use type, and to emphasize avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy.

### **Regulatory Setting**

Federal and state agencies regulate energy use and consumption through various means and programs. On the federal level, the United States Department of Transportation, the United States Department of Energy, and the United States Environmental Protection Agency are three federal agencies with substantial influence over energy policies and programs. Federal requirements and programs are generally related to the consumption of energy by vehicles. These include the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) to promote the development of intermodal transportation systems; and the Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21) enacted in 1998, that ties transportation decisions and land use decisions in order to improve the environment.

Transportation projects developed as part of the intermodal transportation systems proposed in the region are the responsibility of the Southern California Association of Governments (SCAG) through its 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). The RTP/SCS provides objectives for meeting emissions reduction targets set forth by the California Air Resources Board (CARB) to reduce greenhouse gas emissions from automobiles and light trucks through integrated transportation, land use, housing, and environmental planning. The intent is to reduce the vehicles miles traveled thus resulting in lower GHG emissions and a reduction in the amount of fossil fuels used in the region.

The State's Regulations include the following:

#### *California Energy Commission*

The California Energy Commission is responsible for preparing the State Energy Plan in order to assist regional and local agencies with improvements to transportation systems that would result in reduced traffic congestion, improved air quality, and an increase in the efficiency of fuel supplies. The intent is to ultimately reduce vehicle miles traveled and increase the use of alternatives to cars including mass transit, and safer bicycles and pedestrian access.



### *California Energy Code*

Title 24, Part 6 of the California Code of Regulations which is also referred to as the California Energy Code, enacted in 1978 sets forth the energy efficiency standards for residential and nonresidential buildings that are updated approximately every three years. The latest update took effect in January 2017.

### *Integrated Energy Policy Report*

Senate Bill 1389 (Bowen, Chapter 568, Statutes of 2002) requires the California Energy Commission to prepare a biennial integrated energy policy report that assesses major energy trends and issues facing the state's electricity, natural gas, and transportation fuel sectors and provides policy recommendations to conserve resources; protect the environment; ensure reliable, secure, and diverse energy supplies; enhance the state's economy; and protect public health and safety (Public Resources Code § 25301a). The Energy Commission prepares these assessments and associated policy recommendations every two years, with updates in alternate years, as part of the Integrated Energy Policy Report.

The 2018 Integrated Energy Policy Report (2018 IEPR) was adopted February 20, 2019, and continues to work towards improving electricity, natural gas, and transportation fuel energy use in California. The 2018 IEPR focuses on a variety of topics such as including the environmental performance of the electricity generation system, landscape-scale planning, the response to the gas leak at the Aliso Canyon natural gas storage facility, transportation fuel supply reliability issues, updates on Southern California electricity reliability, methane leakage, climate adaptation activities for the energy sector, climate and sea level rise scenarios, and the California Energy Demand Forecast.

### *State of California Energy Plan*

The CEC is responsible for preparing the State Energy Plan, which identifies emerging trends related to energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy. The Plan calls for the state to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies a number of strategies, including assistance to public agencies and fleet operators and encouragement of urban designs that reduce vehicle miles traveled (VMT) and accommodate pedestrian and bicycle access.

### **Assessment Methodology**

Information from the CalEEMod 2016.3.2 outputs for the Air Quality Impact Analysis (AQIA) (Appendix A) was utilized in this analysis, detailing Project related construction equipment, transportation energy demands, and facility energy demands.

### **Construction Equipment Electricity Usage Estimates**

The focus within this section is the energy implications of the construction process, specifically the power cost from on-site electricity consumption during construction of the proposed Project. Based on the *2017 National Construction Estimator*, Richard Pray (2017), typical power cost per 1,000 square feet of construction per month is estimated to be \$2.32. For the development, the Project plans to develop approximately 4,383 square feet of area the course of 24 months. Based on Table 7, the total power cost of the on-site electricity usage during the construction of the proposed Project is estimated to be approximately \$244.05. Additionally, as of July 26, 2019, SCE's general service rate schedule (GS-1) for general uses are \$0.08 per kWh of electricity. As shown on Table

8, the total electricity usage from on-site Project construction related activities is estimated to be approximately 3,051 kWh.

**Table 7**  
**Project Construction Power Cost**

<b>Power Cost</b> (per 1,000 SF of construction area per month)	<b>Total Construction Area Size</b> (1,000 SF)	<b>Construction Duration</b> (months)	<b>Project Construction Power Cost</b>
\$2.32	4.383	24	\$244.05
<b><i>TOTAL PROJECT CONSTRUCTION POWER COST</i></b>			<b><i>\$244.05</i></b>

**Table 8**  
**Project Construction Electricity Usage**

<b>Cost per kWh</b>	<b>Project Construction Electricity Usage (kWh)</b>
\$0.08	3,051
<b><i>TOTAL PROJECT CONSTRUCTION ELECTRICITY</i></b>	<b><i>3,051</i></b>

<sup>1</sup>Assumes the Project will be under the GS-1 General Industrial service rate under SCE

#### Construction Equipment Fuel Estimates

Fuel consumed by construction equipment would be the primary energy resource expended over the course of Project construction. Project construction activity timeline estimates, construction equipment schedules, equipment power ratings, load factors, and associated fuel consumption estimates are presented in Table 9.

Eight-hour daily use of all equipment is assumed. The aggregate fuel consumption rate for all equipment is estimated at 18.5 hp-hr-gal., obtained from California Air Resources Board (CARB) 2018 Emissions Factors Tables and cited fuel consumption rate factors presented in Table D-24 of the Moyer guidelines. For the purposes of this analysis, the calculations are based on all construction equipment being diesel-powered which is standard practice consistent with industry standards. Diesel fuel would be supplied by existing commercial fuel providers serving the Cities and region.

As presented in Table 9, Project construction activities would consume an estimated 194,108 gallons of diesel fuel. Project construction would represent a “single-event” diesel fuel demand and would not require on-going or permanent commitment of diesel fuel resources for this purpose.

**Table 9**  
**Construction Equipment Fuel Consumption Estimates**

Equipment	HP Rating	Qty	Usage Hours	Load Factor	HP-hrs/day	Total Fuel Consumption (gal. diesel fuel)
Cement and Mortar Mixers	9	3	8	0.56	121	3,531
Cranes	231	1	8	0.29	536	15,643
Dumpers/Tenders	16	10	8	0.38	486	14,198
Excavators	158	2	8	0.38	961	28,040
Generator Sets	84	1	8	0.74	497	14,515
Off-Highway Trucks	402	1	8	0.38	1,222	35,672
Other Construction Equipment	172	1	8	0.42	578	16,869
Pavers	130	1	8	0.42	437	12,750
Pumps	84	2	8	0.74	995	29,030
Rollers	80	1	8	0.38	243	7,099
Tractors/Loaders/Backhoes	97	2	8	0.37	574	16,762
Cement and Mortar Mixers	9	3	8	0.56	121	3,531
Cranes	231	1	8	0.29	536	15,643
<b>CONSTRUCTION FUEL DEMAND (GALLONS DIESEL FUEL)</b>						<b>194,108</b>

#### Construction Worker Fuel Estimates

It is assumed that all construction worker trips are from light duty autos (LDA) along area roadways. With respect to estimated VMT, the construction worker trips would generate an estimated 500,094 VMT. Data regarding Project related construction worker trips were based on CalEEMod 2016.3.2 model defaults utilized within the AQIA.

Vehicle fuel efficiencies for LDA were estimated using information generated within the 2014 version of the Emissions FACTor model (EMFAC) developed by the CARB. EMFAC 2014 is a mathematical model that was developed to calculate emission rates, fuel consumption, and VMT from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by the ARB to project changes in future emissions from on-road mobile sources. EMFAC 2014 was run for the LDA vehicle class within the California sub-area for a 2022 calendar year.

As generated by EMFAC 2014, an aggregated fuel economy of LDAs ranging from model year 1974 to model year 2022 are estimated to have a fuel efficiency of 32.15 miles per gallon (mpg). Table 10 provides an estimated annual fuel consumption resulting from the Project generated by LDAs related to construction worker trips. Based on Table 10, it is estimated that 15,554 gallons of fuel will be consumed related to construction worker trips during full construction of the proposed Project. Project construction worker trips would represent a “single-event” gasoline fuel demand and would not require on-going or permanent commitment of fuel resources for this purpose.

**Table 10**  
**Construction Worker Fuel Consumption Estimates**

Worker Trips / Day	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
63	14.7	500,094	32.15	15,554
<b>TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION</b>				<b>15,554</b>

#### Construction Hauling Fuel Estimates

With respect to estimated VMT, the construction hauling trips would generate an estimated 8,200 VMT along area roadways. It is assumed that 100% of all hauling trips are from heavy-heavy duty trucks (HHD). These assumptions are consistent with the 2016.3.2 CalEEMod defaults utilized within the AQIA. Vehicle fuel efficiencies for HHD trucks were estimated using information generated within EMFAC 2014. For purposes of this analysis, EMFAC 2014 was run for the HHD vehicle class within the California sub-area for a 2022 calendar year.

As generated by EMFAC 2014, an aggregated fuel economy of HHD trucks ranging from model year 1974 to model year 2022 are estimated to have a fuel efficiency of 6.76 mpg. Based on Table 11, it is estimated that 1,213 gallons of fuel will be consumed related to construction hauling trips during full construction of the proposed Project.

**Table 11**  
**Construction Hauling Fuel Consumption Estimates**

Vendor Trips	Trip Length (miles)	Vehicle Miles Traveled		Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
410	20	8,200		6.76	1,213
<b>PROJECT HAULING HEAVY DUTY TRUCK TOTAL</b>					<b>1,213</b>

#### Construction Energy Efficiency/Conservation Measures

The equipment used for Project construction would conform to CARB regulations and CA emissions standards. There are no unusual Project characteristics or construction processes that would require the use of equipment that would be more energy intensive than is used for comparable activities; or equipment that would not conform to current emissions standards (and related fuel efficiencies). Equipment employed in construction of the Project would therefore not result in inefficient wasteful, or unnecessary consumption of fuel.

The Project would utilize construction contractors which practice compliance with applicable CARB regulation regarding retrofitting, repowering, or replacement of diesel off-road construction equipment. Additionally, CARB has adopted the Airborne Toxic Control Measure to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter and other Toxic Air Contaminants. Compliance with anti-idling and emissions regulations would result in a more efficient use of construction-related energy and the minimization or elimination of wasteful or unnecessary consumption of energy. Idling restrictions and the use of newer engines and equipment would result in less fuel combustion and energy consumption.

Additionally, certain incidental construction-source energy efficiencies would likely accrue through implementation of California regulations and best available control measures (BACM). More specifically, California Code of Regulations Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of

construction vehicles to no more than five minutes, thereby precluding unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. To this end, “grading plans shall reference the requirement that a sign shall be posted on-site stating that construction workers need to shut off engines at or before five minutes of idling.” In this manner, construction equipment operators are informed that engines are to be turned off at or prior to five minutes of idling. Enforcement of idling limitations is realized through periodic site inspections conducted by County building officials, and/or in response to citizen complaints.

Indirectly, construction energy efficiencies and energy conservation would be achieved for the proposed development through energy efficiencies realized from bulk purchase, transport and use of construction materials.

A full analysis related to the energy needed to form construction materials is not included in this analysis due to a lack of detailed Project-specific information on construction materials. At this time, an analysis of the energy needed to create Project-related construction materials would be extremely speculative and thus has not been prepared.

In general, the construction processes promote conservation and efficient use of energy by reducing raw materials demands, with related reduction in energy demands associated with raw materials extraction, transportation, processing and refinement. Use of materials in bulk reduces energy demands associated with preparation and transport of construction materials as well as the transport and disposal of construction waste and solid waste in general, with corollary reduced demands on area landfill capacities and energy consumed by waste transport and landfill operations.

### **Impact Analysis**

*a) Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?*

**Less Than Significant.** Based on the energy calculations, the Project construction would not result in the inefficient, wasteful or unnecessary consumption of energy. Further, the energy demands of the Project can be accommodated within the context of available resources and energy delivery systems. The Project would therefore not cause or result in the need for additional energy producing or transmission facilities. The Project would not engage in wasteful or inefficient uses of energy and aims to achieve energy conservations goals within the State of California.

*b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?*

**Less Than Significant.** The Project includes construction activity and associated improvements and would not result in the inefficient, wasteful, or unnecessary consumption of energy. In fact, improving the pumps, wells, and maintenance facilities would result in a more efficient process and consequently reduce a wasteful use of energy. Further, the Project would not cause or result in the need for additional energy producing facilities or energy delivery systems.

### **Mitigation Measures:**

No mitigation measures are required.

### **Impact Conclusions:**

No significant adverse impacts are identified or anticipated, and no mitigation measures are required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>VII. GEOLOGY AND SOILS:</b> Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
<ul style="list-style-type: none"> <li>Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.</li> </ul>			X	
<ul style="list-style-type: none"> <li>Strong seismic ground shaking?</li> </ul>			X	
<ul style="list-style-type: none"> <li>Seismic-related ground failure, including liquefaction?</li> </ul>			X	
<ul style="list-style-type: none"> <li>Landslides?</li> </ul>			X	
b) Result in substantial soil erosion or the loss of topsoil?		X		
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- site or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?		X		
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?			X	
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				X
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		X		

**SUBSTANTIATION:** (☐ Check if project is located in the Geologic Hazards Overlay District):

A geotechnical report was prepared for the Project by Ninyo & Moore on August 20, 2019 and is located in Appendix E.

### **Environmental Setting**

The Project site is located within the *Silverwood Lake* USGS 7.5' quadrangle, Township 2 North, Range 4 West, Section 14, in the center of the San Bernardino Mountains, which are bounded on their west side by the San Andreas fault. In the late Quaternary, forces associated with plate motions at the boundary of the North American and Pacific plates, and subsequent crustal adjustments, have elevated the mountains to their present elevations of between 6,000 and 11,500 feet above mean sea level.

## Soils

Regional geologic mapping indicates that the site is underlain by Mesozoic-age mixed granitic rocks of Silverwood Lake (Morton and Miller, 2006). The granitic rock is described as very deeply weathered.

The geotechnical report (Appendix E) identified that the Project area is underlain by fill and Mesozoic-age mixed granitic rock. Fill materials were encountered in exploratory borings to depths of up to approximately 13 feet below the ground surface (bgs). The fill encountered consisted predominantly of clayey sand with varying amounts of gravel that was generally observed to be moist and loose. Granitic bedrock was encountered beneath the fill in our exploratory borings. The granitic rock was observed to be weathered and was generally recovered in the samples as poorly graded sand to silty sand. Bedrock below the site was found to be either decomposed to a residual soil that generally consisted of moist, medium dense, silty sand to weathered granitic bedrock and relatively fresh granitic bedrock.

## Faults

The project site is situated within the San Bernardino Mountains in the Transverse Ranges Geomorphic Province of California (California Geological Survey, 2002). The Transverse Ranges are characterized by east to west oriented blocks and intervening valleys that are generally bounded by east to west trending faults (Norris and Webb, 1990). The major structural fault systems bounding this area of the site are the Cleghorn fault zone to the north, the North Frontal Thrust System to the northeast, the Helendale-South Lockhard fault zone to the east, and the San Andreas fault to the south.

## Landslides

The subject site is located along the top of a northeasterly-trending ridgeline. The ridgeline and site descend to the northeast with elevations at the site ranging from approximately 4,490 feet above MSL near the southwest portion of the site by the existing digester to approximately 4,425 feet above MSL near the existing chlorine building in the northeast portion of the site (CSD, 1984). An approximately 14-foot-high slope descends to the northeast from the existing sludge dewatering building. A cut slope up to approximately 30 feet high that exposes weathered granitic rock descends from the existing digester in the southwest portion of the site. The existing asphalt concrete pavements at the site are deteriorated and have extensive cracking in some areas.

Natural slopes descend up to approximately 200 feet from the site to Houston Creek to the north and a tributary drainage to the southeast. The natural slopes are generally inclined at a slope ratio of 2:1 or flatter and have a moderately dense growth of pine trees, oak trees, and other native vegetation. Scattered boulders were observed on the ground surface on the natural slopes.

## Liquefaction

Liquefaction is the phenomenon in which loosely deposited granular soils and non-plastic silts located below the water table undergo rapid loss of shear strength when subjected to strong earthquake-induced ground shaking. Ground shaking of sufficient duration results in the loss of grain-to-grain contact due to a rapid rise in pore water pressure, and causes the soil to behave as a fluid for a short period of time. Liquefaction is known generally to occur in saturated or near saturated cohesionless soils at depths shallower than 50 feet. Factors known to influence liquefaction potential include composition and thickness of soil layers, grain size, relative density, groundwater level, degree of saturation, and both intensity and duration of ground shaking.

Groundwater underlying the project site probably occurs within interconnected fractures of the granitic bedrock. Groundwater elevations typically conform to ground surface topography, but the depth to groundwater beneath the project site is dependent on the concentration and hydraulic connection of fractures with depth. During drilling,

groundwater was encountered at approximately 27.75 feet and 20 feet bgs in the vicinity of the proposed new dewatering building, and generally correlated with decreasing in weathering of the granitic rock. Groundwater was not encountered in the vicinity of the proposed new clarifier. Fluctuations in the level of groundwater may occur due to variations in ground surface topography, subsurface stratification, rainfall, irrigation practices, groundwater pumping, and other factors that may not have been evident at the time of our field evaluation.

The site is not located in an area of liquefaction according to San Bernardino County Geologic Hazards mapping (Map FH14C).

The County of San Bernardino follows the Uniform Building Code (UBC) which requires liquefaction investigation in regions that are underlain by shallow ground water within 30 feet of the surface.

### **Impact Analysis**

- a) *Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:*
- *Rupture of a known earthquake fault, as delineated on the most recent Alquist Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.*
  - *Strong seismic ground shaking?*
  - *Seismic related ground failure, including liquefaction?*
  - *Landslides?*

**Less Than Significant.** The Project alignment occurs within San Bernardino, a seismically active region. However, the Project alignment is not within an Alquist-Priolo Earthquake Fault Zone as the northwest/southeasterly trending Mill Creek Fault - San Andreas North Branch is located nearly 5 miles east of the Project site (CGS, July 1, 2019).

The subject site is located along the top of a northeasterly-trending ridgeline designated by San Bernardino County as being in an area of low to moderate risk of landslides. However, the facility has existed since the 1950s and has not experienced seismic failure or landslides.

The site is not located in an area of liquefaction according to San Bernardino County Geologic Hazards mapping (Map FH14C). Additionally, due to the mountainous terrain and shallow bedrock, the site is not located in an area considered susceptible to liquefaction.

- b) *Result in substantial soil erosion or the loss of topsoil?*

**Less Than Significant With Mitigation Incorporated.** Proposed construction activities include the removal of existing pavement, soil and vegetation which could expose soils to erosion. To ensure the control of erosion, the CSD is required to implement Best Management Practices (BMPs) for both wind and water erosion. For potential wind erosion, during construction, contractors will be required to use water trucks to control dust and stabilize any temporary stockpiles of soil (until removed from the sites). Dust control is evaluated in more detail in Section III, Air Quality.



Construction disturbance is anticipated to be less than 1 acre. Construction activities less than 1 acre do not require compliance with Construction General Permit Order 2009-0009-DWQ. However, because the Project involves construction at an existing wastewater treatment plant and the project activities may exceed 1 acre in size, **Mitigation Measure GEO-1** will be required that will address soil stockpiles, protection of excavated materials and water runoff during construction. Mitigation measures are located at the end of this section. **Mitigation Measure GEO-1** requires that an Erosion Control Plan be prepared to address on-site and off-site drainage and erosion control during construction to ensure that any potentially impacted materials and runoff will not be conveyed off-site.

For potential wind erosion, contractors must comply with SCAQMD Rule 403 which requires the implementation of best available dust control measures (BACM) during active operations that are capable of generating fugitive dust. These may include but are not limited to applying water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes and using tarps or other suitable enclosures on haul trucks.

- c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- site or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?*

**Less Than Significant With Mitigation Incorporated.** Based the geotechnical study provided in Appendix E, the site is underlain by a mix of fill soils consisting of clayey sand, residual soil consisting of silty sand, and weathered and relatively fresh granitic bedrock at various depths. The existing fill and residual soils generally are composed of granular soils that may be subject to caving. These materials should be considered Type C soils in accordance with Occupational Safety and Health Administration (OSHA) soil classifications. Dense granitic rock may be considered Type A, stable rock. The geotechnical report identified that the bedrock material is considered highly stable and can be excavated with conventional equipment. The seismic survey identified that the shear velocity of the fresh bedrock was approximately 4,000 feet per second, which is lower than the 6,000 feet per second that is generally considered to be the threshold for blasting rock for excavation.

Shallow perched groundwater was encountered in two exploratory borings at depths of approximately 20 feet and 27.75 feet, primarily in the area of the existing trickling filters and new building, where the excavation for the footings are not anticipated to be greater than 10 feet. However, the geotechnical analysis noted that the fluctuations in the groundwater level may occur as a result of variations in seasonal precipitation, irrigation practices, and other factors. The subject site is not located within a State of California Earthquake Fault Zone, and no known active faults underlie the site. The County of San Bernardino follows the Uniform Building Code (UBC) which requires liquefaction investigation in regions that are underlain by shallow ground water within 30 feet of the surface. Excavation of the new clarifier is estimated at 15 to 20 feet deep, and groundwater was not encountered in borings in that area. However, to ensure groundwater has not infiltrated into the areas proposed for construction, **Mitigation Measure GEO-2** at the end of this section is recommended.

The probability of surface fault rupture at the site was determined to be low.

And though there the site is not within a liquefaction zone or area of subsidence or landslides, **Mitigation Measure GEO-3**, at the end of this section, is incorporated to reduce the potential for the fill materials to become unstable during operations.

- d) Be located on expansive soil, as defined in Table 18-I-B of the Uniform Building Code (1994), creating substantial risks to life or property?*

**Less Than Significant.** Expansive soils are considered those that contain a significant amount of clay and are subject to swelling as a response to changes in water content. Soils with a high content of expansive material can form cracks in drier seasons, and impact building loads. In the Project area, expansive soils are not considered a hazard because the soils contain little clay and are primarily derived from the regional granitic bedrock. Therefore, there is a less than significant impact.

*e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?*

**No Impact.** None of the Project activities propose or involve the use of septic tanks or alternative wastewater disposal systems. Therefore, there is no impact.

*f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?*

**Less Than Significant With Mitigation Incorporated.** There are no unique geological features that have been identified on the Project site. Paleontological resources have a low potential to occur within the soils found within the Project site because primarily weathered granitic bedrock or undocumented fill was encountered. Therefore, the impacts are anticipated to be less than significant. However, accommodate any unanticipated resources **Mitigation Measure GEO-4** is required:

**Mitigation Measures:**

**GEO-1** The contractor will provide to the CSD an Erosion Control Plan (ECP) that will identify the Best Management Practices (BMPs) for managing any stockpiled materials on site and excavation. The BMPs may include but not be limited to the following:

- Prevent mud and debris from entering roadways, including the main entry road by providing trackout measures.
- Locate stockpiles away from drainage courses, drain inlets or concentrated flows of storm water.
- For wind erosion control, apply water or other dust palliative to stockpiles. Smaller stockpiles may be covered as an alternative.
- Place bagged materials on pallets under cover.
- During the rainy season, non-active soil stockpiles will be covered with heavy plastic and the stockpile contained within a temporary perimeter sediment barrier, such as berms, dikes, silt fences, or sandbag barriers. A soil stabilization measure may be used in lieu of cover.
- During the non-rainy season prior to the onset of rain, the stockpile should either be covered or protect them with temporary perimeter sediment barriers.
- Year-round, active soil stockpiles will be protected with temporary linear sediment barriers prior to the onset of rain.
- The main haul road will be graded and watered at least once per day, or as often as necessary to control dust as required by the South Coast Air Quality Management District (SCAQMD).

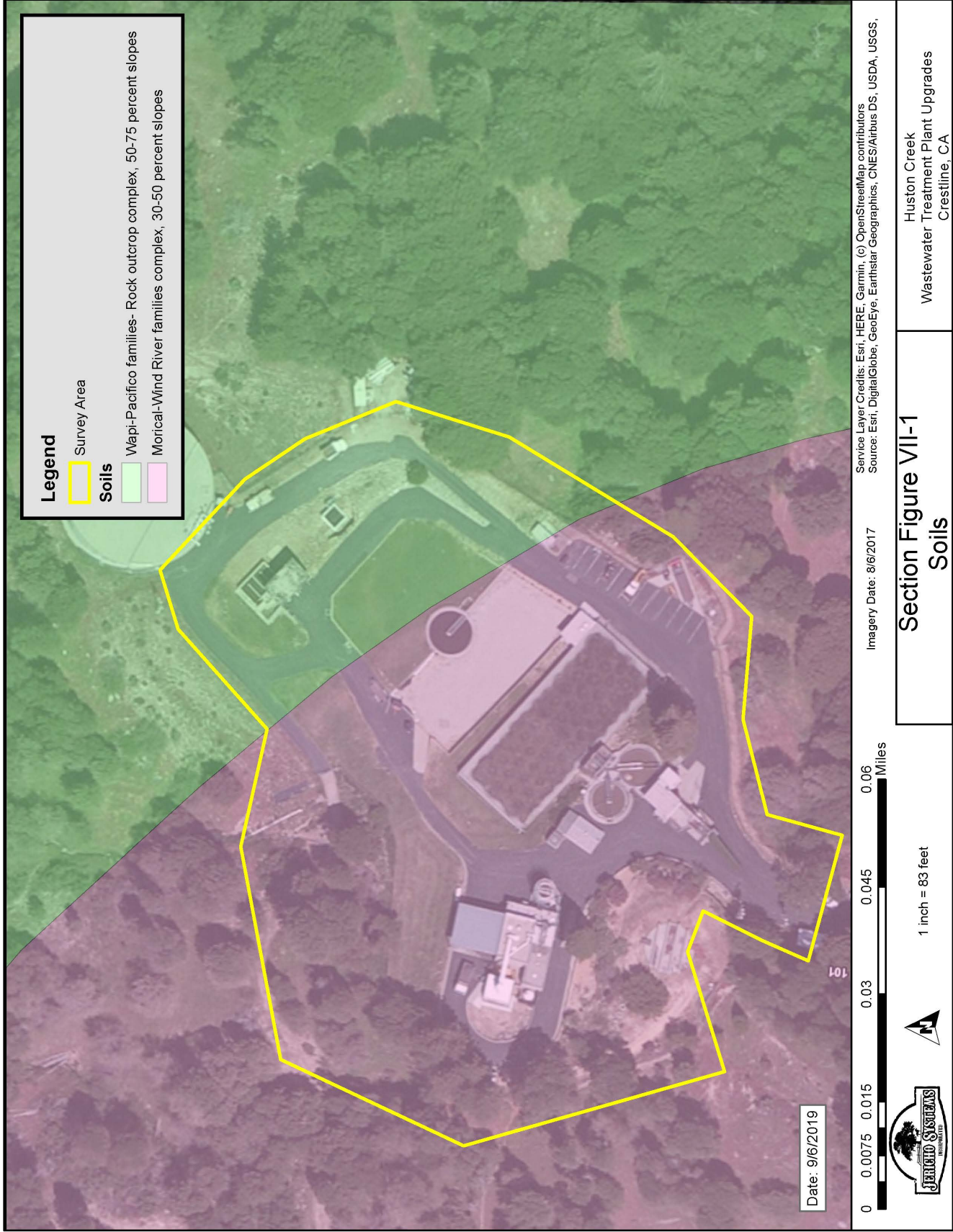
**GEO-2** Prior to construction, conduct at least one exploratory boring at the site of the proposed building and clarifier to determine the potential for groundwater and encountering hard, fresh bedrock to determine the level of construction equipment necessary.

- GEO-3** Earthwork at the site should include remedial grading to remove fill and loose native materials to competent bedrock in areas of the proposed improvements.
- GEO-4** **Paleontological Resources.** Any substantial excavations (i.e. over 5 feet in depth) in the proposed Project area should be monitored closely to quickly and professionally recover any fossil remains discovered while not impeding development. Also, sediment samples should be collected and processed to determine the small fossil potential in the proposed Project area. Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.

**Impact Conclusions:**

No significant adverse effects are anticipated with the inclusion of the above mitigation measures.

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	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>VIII. GREENHOUSE GAS EMISSIONS:</b> Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			X	
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			X	

A Greenhouse Gas Emissions Analysis was prepared for the Project and is located in Appendix F.

According to CEQA Guidelines Section 15064.4, when making a determination of the significance of greenhouse gas emissions, the “lead agency shall have discretion to determine, in the context of a particular project, whether to use a model or methodology to quantify greenhouse gas emissions resulting from a project, and which model or methodology to use.” In addition, CEQA Guidelines section 15064.7(c) provides that “a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies or recommended by experts” on the condition that “the decision of the lead agency to adopt such thresholds is supported by substantial evidence.” For the purpose of this initial study, SCAQMD guideline will be adhered to.

### **Regulatory Setting**

#### *State Executive Orders and Legislation*

Executive Order S-3-05. California Governor issued Executive Order S-3-05, GHG Emission, in June 2005, which established the following targets:

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

The executive order directed the secretary of CalEPA to coordinate a multi-agency effort to reduce GHG emissions to the target levels. To comply with the Executive Order, the secretary of CalEPA created the California Climate Action Team (CAT), made up of members from various State agencies and commissions. The team released its first report in March 2006. The report proposed to achieve the targets by building on the voluntary actions of businesses, local governments, and communities and through State incentive and regulatory programs.

Executive Order S-01-07. Executive Order S-1-07 was issued in 2007 and proclaims that the transportation sector is the main source of GHG emissions in the State, since it generates more than 40 percent of the State’s GHG emissions. It establishes a goal to reduce the carbon intensity of transportation fuels sold in the State by at least ten percent by 2020. This Order also directs CARB to determine whether this Low Carbon Fuel Standard (LCFS) could be adopted as a discrete early-action measure as part of the effort to meet the mandates in AB 32.

SB 97. Senate Bill 97 (SB 97) was adopted August 2007 and acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA. SB 97 directed the Governor’s Office of Planning and Research (OPR), which is part of the State Resource Agency, to prepare, develop, and transmit to CARB guidelines

for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA, by July 1, 2009. The Resources Agency was required to certify and adopt those guidelines by January 1, 2010.

Pursuant to the requirements of SB 97 as stated above, on December 30, 2009 the Natural Resources Agency adopted amendments to the state CEQA guidelines that address GHG emissions. The GHG emission reduction amendments went into effect on March 18, 2010 and include the use of climate action plans to evaluate a project's impacts and methods to mitigate a project's GHG emissions.

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

The CARB Board approved the 1990 greenhouse gas emissions level of 427 million metric tons of carbon dioxide equivalent (MMTCO<sub>2</sub>e) on December 6, 2007 (California Air Resources Board 2007). Therefore, emissions generated in California in 2020 are required to be equal to or less than 427 MMTCO<sub>2</sub>e. Emissions in 2020 in a "business as usual" scenario are estimated to be 596 MMTCO<sub>2</sub>e.

CARB's Climate Change Scoping Plan (Scoping Plan) contains measures designed to reduce the State's emissions to 1990 levels by the year 2020 (California Air Resources Board 2008). The Scoping Plan identifies recommended measures for multiple greenhouse gas emission sectors and the associated emission reductions needed to achieve the year 2020 emissions target—each sector has a different emission reduction target. Most of the measures target the transportation and electricity sectors.

SB 375. Senate Bill 375 (SB 375) was adopted September 2008 and aligns regional transportation planning efforts, regional GHG emission reduction targets, and land use and housing allocation. SB 375 requires Metropolitan Planning Organizations (MPO) to adopt a sustainable communities strategy (SCS) or alternate planning strategy (APS) that will prescribe land use allocation in that MPOs Regional Transportation Plan (RTP). CARB, in consultation with each MPO, will provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every eight years but can be updated every four years if advancements in emissions technologies affect the reduction strategies to achieve the targets. CARB is also charged with reviewing each MPO's sustainable communities strategy or alternate planning strategy for consistency with its assigned targets.

The proposed project is located within the Southern California Association of Governments (SCAG), which has authority to develop the SCS or APS. For the SCAG region, the targets set by CARB are at eight percent below 2005 per capita GHG emissions levels by 2020 and 13 percent below 2005 per capita GHG emissions levels by 2035. On April 4, 2012, SCAG adopted the *2012-2035 Regional Transportation Plan / Sustainable Communities Strategy* (RTP/SCS), which meets the CARB emission reduction requirements.

County land use policies, including General Plans, are not required to be consistent with the RTP and associated SCS or APS. However, new provisions of CEQA would incentivize, through streamlining and other provisions, qualified projects that are consistent with an approved SCS or APS and categorized as "transit priority projects."

Executive Order S-13-08. Executive Order S-13-08 indicates that "climate change in California during the next century is expected to shift precipitation patterns, accelerate sea level rise and increase temperatures, thereby posing a serious threat to California's economy, to the health and welfare of its population and to its natural resources." Pursuant to the requirements in the order, the 2009 California Climate Adaptation Strategy (California Natural Resource Agency 2009) was adopted, which is the "... first statewide, multi-sector, region-specific, and



information-based climate change in California, identifying and exploring strategies to adapt to climate change, and specifying a direction for future research.”

Executive Order B-30-15. Executive Order B-30-15, establishing a new interim statewide greenhouse gas emission reduction target to reduce greenhouse gas emissions to 40 percent below 1990 levels by 2030, was signed by Governor Brown in April 2015.

#### *South Coast Air Quality Management District*

The Project is within the South Coast Air Basin, which is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). SCAQMD Regulation XXVII currently includes three rules:

- The purpose of Rule 2700 is to define terms and post global warming potentials.
- The purpose of Rule 2701, SoCal Climate Solutions Exchange, is to establish a voluntary program to encourage, quantify, and certify voluntary, high quality certified greenhouse gas emission reductions in the SCAQMD.
- Rule 2702, Greenhouse Gas Reduction Program, was adopted on February 6, 2009. The purpose of this rule is to create a Greenhouse Gas Reduction Program for greenhouse gas emission reductions in the SCAQMD. The SCAQMD will fund projects through contracts in response to requests for proposals or purchase reductions from other parties.

#### *SCAQMD Threshold Development*

SCAQMD has established recommended significance thresholds for greenhouse gases for local lead agency consideration. SCAQMD has published a five-tiered draft GHG threshold which includes a 10,000 metric ton of CO<sub>2</sub>e per year for stationary/industrial sources and 3,000 metric tons of CO<sub>2</sub>e per year significance threshold for residential/commercial projects. Tier 3 is anticipated to be the primary tier by which the SCAQMD will determine significance for projects. The Tier 3 screening level for stationary sources is based on an emission capture rate of 90 percent for all new or modified projects. A 90-percent emission capture rate means that 90 percent of total emissions from all new or modified stationary source projects would be subject to CEQA analysis. The 90-percent capture rate GHG significance screening level in Tier 3 for stationary sources was derived using the SCAQMD’s annual Emissions Reporting Program.

The current draft thresholds consist of the following tiered approach:

Tier 1	consists of evaluating whether or not the project qualifies for any applicable exemption under CEQA.
Tier 2	consists of determining whether or not the project is consistent with a greenhouse gas reduction plan. If a project is consistent with a qualifying local greenhouse gas reduction plan, it does not have significant greenhouse gas emissions.
Tier 3	consists of screening values, which the lead agency can choose but must be consistent. A project's construction emissions are averaged over 30 years and are added to a project's operational emissions. If a project's emissions are under one of the following screening thresholds, then the project is less than significant: <ul style="list-style-type: none"> <li>- All land use types: 3,000 MTCO<sub>2</sub>e per year</li> <li>- Based on land use types: residential is 3,500 MTCO<sub>2</sub>e per year; commercial is 1,400 MTCO<sub>2</sub>e per year; and mixed use is 3,000 MTCO<sub>2</sub>e per year</li> </ul>
Tier 4	has the following options: <ul style="list-style-type: none"> <li>- Option 1: Reduce emissions from business as usual by a certain percentage; this percentage is currently undefined</li> <li>- Option 2: Early implementation of applicable AB 32 Scoping Plan measures</li> <li>- Option 3: Year 2020 target for service populations (SP), which includes residents and employees: 4.8 MTCO<sub>2</sub>e/SP/year for projects and 6.6 MTCO<sub>2</sub>e/SP/year for plans;</li> <li>- Option 3, 2035 target: 3.0 MTCO<sub>2</sub>e/SP/year for projects and 4.1 MTCO<sub>2</sub>e/SP/year for plans</li> </ul>
Tier 5	involves mitigation offsets to achieve target significance threshold.

## **Environmental Setting**

Constituent gases of the Earth's atmosphere, called atmospheric greenhouse gases (GHG), play a critical role in the Earth's radiation amount by trapping infrared radiation emitted from the Earth's surface, which otherwise would have escaped to space. Prominent greenhouse gases contributing to this process include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), ozone, water vapor, nitrous oxide (N<sub>2</sub>O), and chlorofluorocarbons (CFCs). This phenomenon, known as the Greenhouse Effect, is responsible for maintaining a habitable climate.

Anthropogenic (caused or produced by humans) emissions of these greenhouse gases in excess of natural ambient concentrations are responsible for the enhancement of the Greenhouse Effect and have led to a trend of unnatural warming of the Earth's natural climate, known as global warming or climate change. Emissions of gases that induce global warming are attributable to human activities associated with industrial/manufacturing, agriculture, utilities, transportation, and residential land uses.

According to SB 375, the transportation sector is responsible for 40 percent of the State's greenhouse gas emissions. Emissions of CO<sub>2</sub> and nitrous oxide (NO<sub>x</sub>) are byproducts of fossil fuel combustion. Methane, a potent greenhouse gas, results from off-gassing associated with agricultural practices and landfills. Sinks of CO<sub>2</sub>, where CO<sub>2</sub> is stored outside of the atmosphere, include uptake by vegetation and dissolution into the ocean. Table 12, *Description of Greenhouse Gases*, provides a description of each of the greenhouse gases and their global warming potential.

**Table 12**  
**Description of Greenhouse Gases**

GHG	Description and Physical Properties	Sources
Nitrous oxide	Nitrous oxide (N <sub>2</sub> O), also known as laughing gas is a colorless gas. It has a lifetime of 114 years. Its global warming potential is 298	Microbial processes in soil and water, fuel combustion, and industrial processes. In addition to agricultural sources, some industrial processes (nylon production, nitric acid production) also emit N <sub>2</sub> O.
Methane	Methane (CH <sub>4</sub> ) is a flammable gas and is the main component of natural gas. It has a lifetime of 12 years. Its global warming potential is 28-36.	A natural source of CH <sub>4</sub> is from the decay of organic matter. Methane is extracted from geological deposits (natural gas fields). Other sources are from the decay of organic material in landfills, fermentation of manure, and cattle farming.
Carbon dioxide	Carbon dioxide (CO <sub>2</sub> ) is an odorless, colorless, natural greenhouse gas. Carbon dioxide's global warming potential is 1. The concentration in 2005 was 379 parts per million (ppm), which is an increase of about 1.4 ppm per year since 1960.	Natural sources include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources are from burning coal, oil, natural gas, and wood.
Chlorofluorocarbons	CFCs are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the earth's surface). They are gases formed synthetically by replacing all hydrogen atoms in methane or methane with chlorine and/or fluorine atoms. Global warming potentials range from 3,800 to 8,100.	Chlorofluorocarbons were synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. They destroy stratospheric ozone, therefore their production was stopped as required by the Montreal Protocol.
Hydrofluorocarbons	Hydrofluorocarbons (HFCs) are a group of greenhouse gases containing carbon, chlorine, and at least one hydrogen atom. Global warming potentials range from 140 to 14,800.	Hydrofluorocarbons are synthetic manmade chemicals used as a substitute for chlorofluorocarbons in applications such as automobile air conditioners and refrigerants.
Sulfur hexafluoride	Sulfur hexafluoride (SF <sub>6</sub> ) is an inorganic, odorless, colorless, and nontoxic, nonflammable gas. It has a lifetime of 3,200 years. It has a high global warming potential, 22,800.	This gas is manmade and used for insulation in electric power transmission equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

## **Impact Analysis**

- a) *Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?*

**Less Than Significant.** On October 17, 2017, the SCAQMD, in conjunction with the California Air Pollution Control Officers Association (CAPCOA) and other California air districts, released the latest version of the California Emissions Estimator Model™ (CalEEMod) v2016.3.2. The purpose of this model is to calculate construction-source and operational-source criteria pollutant (VOCs, NO<sub>x</sub>, SO<sub>x</sub>, CO, PM<sub>10</sub>, and PM<sub>2.5</sub>) and GHG emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from mitigation measures. Accordingly, the latest version of CalEEMod™ has been used for this Project to determine GHG emissions.

## **Construction Life-Cycle Analysis Not Required**

A full life-cycle analysis (LCA) for construction activity is not included in this analysis due to the lack of consensus guidance on LCA methodology at this time. Life-cycle analysis (i.e., assessing economy-wide GHG emissions from the processes in manufacturing and transporting all raw materials used in the project development, and infrastructure) depends on emission factors or econometric factors that are not well established for all processes. At this time, an LCA would be extremely speculative and thus has not been prepared.

Additionally, the SCAQMD recommends analyzing direct and indirect project GHG emissions generated within California and not life-cycle emissions because the life-cycle effects from a project could occur outside of California, might not be very well understood or documented, and would be challenging to mitigate (South Coast Air Quality Management District, 2008). Additionally, the science to calculate life cycle emissions is not yet established or well defined; therefore, SCAQMD has not recommended, and is not requiring, life-cycle emissions analysis.

### Construction Emissions

Construction activities associated with the Project would result in emissions of CO<sub>2</sub> and CH<sub>4</sub> from construction activities. The report *Air Quality Impact Analysis Report* (AQIA) (Urban Crossroads, Inc., 2019) contains detailed information regarding construction activity.

### Operational Emissions

In terms of operational GHG emissions, the proposed Project involves the construction new upgrade the existing wastewater treatment plant with the addition of a primary clarifier, backup generator, trickling filter recirculation pumps, and a sludge dewatering building. Although a backup generator is also proposed, the proposed Project does not include any substantive new stationary or mobile sources of emissions, and therefore, by its very nature, will not generate quantifiable GHG emissions from Project operations. While it is anticipated that the Project would require intermittent maintenance to be, such maintenance would be minimal requiring a negligible amount of traffic trips on an annual basis. Therefore, there is no significant operational impact.

### Emissions Summary

As shown in Table 13, the Project will result in approximately 1,989.10 MTCO<sub>2</sub>e per year from construction activities, for the approximately two years of construction.

**Table 13**  
**Project GHG Emissions**

Emission Source	Emissions (metric tons per year)			
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Total CO <sub>2</sub> E
Annual construction-related emissions	1,978.44	0.43	0.00	1,989.10
<b>Total CO<sub>2</sub>E (All Sources)</b>	<b>1,989.10</b>			

Source: CalEEMod™ model output, See Appendix A for detailed model outputs.

The County of San Bernardino adopted the GHG Plan in September 2011, which provides guidance on how to analyze GHG emissions and determine significance during the CEQA review of proposed development projects within the County.

The County includes a GHG Development Review Process (DRP) that specifies a two-step approach in quantifying GHG emissions. First, a screening threshold of 3,000 MT CO<sub>2</sub>e per year is used to determine if additional analysis is required. Projects that exceed the 3,000 MTCO<sub>2</sub>e per year will be required to either achieve a minimum 100 points per the Screening Tables or a 31% reduction over 2007 emissions levels. Consistent with CEQA guidelines, such projects would be determined to have a less than significant individual and cumulative impact for GHG emissions.

As shown in Table 13, the Project will result in approximately 1,989.10 MTCO<sub>2</sub>e per year; the proposed project would not exceed the screening threshold of 3,000 MTCO<sub>2</sub>e per year. As such, the Project would result in a less than significant impact and no further analysis is required consistent with the County's DRP methodology.

*b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?*

**Less Than Significant.** There are no existing GHG plans, policies, or regulations that have been adopted by CARB or SCAQMD that would apply to this type of emissions source. However, the operator shall comply with CARB and SCAQMD regulations related to diesel-fueled trucks.

The Project involves construction activity and does not propose a trip-generating land use or facilities that would generate any substantive amount of on-going GHG emissions. As presented in Table 13, the project's short-term GHG emissions are below the 3,000 MTCO<sub>2</sub> per year screening threshold. Therefore, proposed Project would not generate a significant amount of GHGs emissions. The proposed Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Impacts are less than significant in this regard.

**Mitigation Measures:**

No mitigation measures are required.

**Impact Conclusions:**

No significant adverse impacts are identified or anticipated, and no mitigation measures are required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>IX. HAZARDS AND HAZARDOUS MATERIALS:</b> Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?		X		
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?		X		
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?			X	
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				X
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X
g) Expose people or structures, either directly or indirectly to a significant risk of loss, injury or death involving wildland fires?		X		

### **Environmental Setting**

The section was developed by reviewing general and comprehensive plans, County websites, querying Federal and State databases, and evaluating aerial imagery.

The County of San Bernardino has identified the Project site as in a Fire Safety Overlay Area, a region designated by the Fire Authority as a wildfire risk area. It includes all the land generally characterized by areas varying from relatively flat to steep sloping terrain and with moderate to heavy fuel loading contributing to high fire hazard conditions. Present and future development within the Fire Safety Overlay is exposed to the impacts of wildland fires and other natural hazards primarily due to native fuel types, topography, and prevailing weather conditions such as Santa Ana winds. These factors contribute to the potential of extreme wild land fire behavior conditions.

### Regulatory Setting

Hazardous materials and hazardous wastes are heavily regulated by a range of federal, State and local agencies. One of the primary hazardous materials regulatory agencies is the California Environmental Protection Agency (EPA) Department of Toxic Substances Control (DTSC). DTSC is authorized by the U.S. EPA to enforce and implement federal hazardous materials laws and regulations.

Federal and State hazardous materials regulations require all businesses that handle more than a specified amount of hazardous materials or extremely hazardous materials to obtain a hazardous materials permit and submit a business plan to its local Certified Unified Program Agency (CUPA). The CUPA also ensures local compliance with all applicable hazardous materials regulations. For the CSD, the CUPA is the San Bernardino County Fire Department, Hazardous Materials Division which also manages the following hazardous waste programs:

- Hazardous Materials Release Response Plans and Inventory
- California Accidental Release Program
- Underground Storage Tanks
- Aboveground Petroleum Storage Act/Spill Prevention, Control, and Countermeasure Plan
- Hazardous Waste Generation and Onsite Treatment
- Hazardous Materials Management Plans and Inventory

### Hazardous Waste Sites Near the Project Area

State and Federal databases were reviewed to identify hazardous waste facilities including Federal Superfund sites, State Response sites, Voluntary Cleanup sites, School Cleanup sites, Permitted Operating sites, Corrective Action sites, and Tiered Permit sites within or adjacent to the Project. The database search revealed that there were no sites of concern within the Project area.

### Impact Analysis

- a) *Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?*

**Less Than Significant With Mitigation Incorporated.** Project construction would involve the use of heavy equipment, which would contain fuels, oils, lubricants, solvents, and various other possible contaminants. Temporary storage tanks necessary to store fuel and/or other flammable or combustible liquids required on the Project Site during construction would be regulated through the applicable federal, State, and local regulations as overseen by agencies such as the State Department of Health Services and San Bernardino County. Therefore, impacts related to construction hazards are considered less than significant with mitigation incorporated.

The Proposed Project would involve the removal of existing asphalt. Asphalt is not currently regulated as a hazardous material, but potential contaminants in the asphalt binder require off-site disposal restrictions imposed by the State of California Integrated Waste Management Board. The asphalt removed may be ground on-site and reused in the road base material. Or, the asphalt may be hauled for disposal. Implementation of **Mitigation Measure HAZ – 1** would ensure that all asphalt removed from the Proposed Project would be disposed of in accordance with current regulations at a permitted facility. Mitigation measures are located at the end of this section.

- b) *Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?*

**Less Than Significant With Mitigation Incorporated.** The potential exists for localized spills of petroleum-based products or other chemicals during construction. These spills could expose construction workers and the public to hazardous materials either directly, at the site of the spill, or indirectly, by introducing these substances into stormwater runoff.

Additionally, the site is an existing wastewater treatment facility that has operated since the 1950s. There is the potential for subsurface excavation to unearth raw materials that may have leached from older broken pipes and/or equipment that may not be known. To ensure that potential impacts would be less than significant, implementation of **Mitigation Measures HAZ-2** and **HAZ-3** is required. Mitigation Measures are located at the end of this section.

- c) *Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?*

**No Impact.** There are no schools, existing or proposed, within one-quarter mile of the Project site. The proposed Project does not involve transporting or emitting acutely hazardous materials that could result in a danger to any schools. Therefore, there is no impact.

- d) *Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?*

**Less Than Significant.** The proposed Project is not located on a site which is included on a list of hazardous materials sites, nor are hazardous materials sites located near the Project site. The Project site is an active wastewater treatment facility that is subject Waste Discharge Requirements from the Regional Water Quality Control Board for the release of treated wastewater. Therefore, there is Less Than Significant Impact.

- e) *For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?*

**No Impact.** There are several airports in the vicinity, but none are located within two miles of the Project site. These airports include: the San Bernardino International Airport, located approximately 5 miles southeast of the Project alignment, the Rialto Airport, located approximately 4 miles west of the Project alignment, and the Ontario International Airport, located approximately 15 miles southwest of the Project alignment.

- f) *Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?*

**No Impact.** The Project site is within an existing wastewater treatment plant accessed by a private roadway and does not include facilities for emergency response. Additionally, no part of the Project construction or design would impede or redirect emergency response within the area.



- g) Expose people or structures, either directly or indirectly to a significant risk of loss, injury or death involving wildland fires?*

**Less Than Significant With Mitigation Incorporated.** The facility is located in the San Bernardino mountains, which is identified by the County of San Bernardino as a high fire risk area. The facility, while cleared, is surrounded by forest vegetation, and sparks from equipment may ignite adjacent vegetation. The closest residential areas to the construction area lie approximately 1,000 feet south of the facility. And though there is a low risk of a fire from construction of the new components, **Mitigation Measure HAZ-4** is incorporated to ensure the potential risk is less than significant. Mitigation measures are located at the end of this section.

**Mitigation Measures:**

- HAZ – 1** All asphalt requiring removal from the Project Site shall be disposed of in accordance with current regulatory standards
- HAZ – 2** A hazardous spill prevention plan shall be prepared by the Applicant and submitted to the County for approval to minimize the likelihood of a spill shall be prepared prior to construction. The plan shall state the actions that would be required if a spill occurs to prevent contamination of surface waters and provide for cleanup of the spill. The plan shall follow Federal, state, and local safety guidelines and standards to avoid increased exposure to these pollutants.
- HAZ – 3** If a contaminated area is encountered during construction, construction shall cease in the vicinity of the contaminated area. The construction contractor shall notify all appropriate authorities, including the EPA and the County, if appropriate. If necessary, the contaminated site shall be remediated to minimize the potential for exposure of the public and to allow the Project to be safely constructed.
- HAZ-4** During construction, all staging areas, welding areas, or areas slated for construction using spark-producing equipment will be cleared of dried vegetation or other material that could ignite. Spark arresting equipment shall be in good working order. The District shall require all vehicles and crews working at the project site to have access to functional fire extinguishers at all times. In addition, construction crews are required to have a spotter during welding activities to look out for potentially dangerous situations, including accidental sparks. The contractor also shall provide a safety plan for the implementation of additional protocols when the National Weather Service issues a Red Flag Warning. Such protocols should address smoking and fire rules, storage and parking areas, use of gasoline-powered tools, use of spark arresters on construction equipment, road closures, use of a fire guard, fire suppression tools, fire suppression equipment, and training requirements.

**Impact Conclusion:**

No significant adverse effects are anticipated with the inclusion of the above mitigation measures.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>X. HYDROLOGY AND WATER QUALITY:</b> Would the project:				
a) Violate any water quality standards or waste discharge requirements?		X		
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?			X	
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner which would:			X	
<ul style="list-style-type: none"> <li>result in substantial erosion or siltation onsite or offsite;</li> </ul>			X	
<ul style="list-style-type: none"> <li>substantially increase the rate or amount of surface water runoff in a manner which would result in flooding on or offsite;</li> </ul>			X	
<ul style="list-style-type: none"> <li>create or contribute to runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or</li> </ul>				X
<ul style="list-style-type: none"> <li>impede or redirect flood flows?</li> </ul>				X
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?				X
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?			X	

### **Environmental Setting**

The Project is not located within an adjudicated groundwater basin. The State Department of Water Resources (DWR) classifies this portion of the San Bernardino Mountains as ‘non-water bearing’ and therefore is not included on the California Statewide Groundwater Elevation Monitoring (CASGEM) priority list, or subject to the 2014 Sustainable Groundwater Management Act (SGMA). The area is also not included in DWR “Bulletin 118” list of groundwater basin data. The San Bernardino Mountains consist of a complex of crystalline granitic rocks that have intruded metaplutonic and metasedimentary rocks (Crestline Village Water District, July 19, 2016). Thus, there are no unconsolidated sediments or traditional groundwater basins in this mountainous area. Instead, groundwater is confined to open fractures in the hard metamorphic and granitic mountain rocks underlying the Project area. Groundwater is fed by rainfall and snow seeping into fractures along drainage courses, and may discharge down-gradient as a spring, enter the bottom of a drainage feeding a flow, or continue to move down-gradient beneath the surface (Crestline Village Water District, July 19, 2016).

The fractured rock aquifers are very different than traditional alluvial groundwater basins in that they produce far smaller volumes, are tightly correlated with precipitation, and there is no “basin” of water to measure in order to calculate things like a “safe yield” or “overdraft”. Water is transmitted only through cracks and fractures from the folding and faulting of the rock over time; thus, explaining the difficulty in their ability to collect and store water. (Crestline Village Water District, July 19, 2016).

Water to the Crestline area, including the Project area, is supplied by the Crestline Village Water District (CVWD). The CVWD serves most water from the State Water Project through purchases from the Crestline-Lake Arrowhead Water Agency and by drawing from up to 50 groundwater wells in various locations of the fractured bedrock in the Crestline area.

### Water Quality

The CSD currently performs monthly surface water quality monitoring of Huston Creek, Seeley Creek, and Dart Creek for methylene blue active substances, fecal streptococci, fecal coliform, and total coliform, and carries out semi-annual municipal supply water monitoring for total dissolved solids, chlorine, sodium, and sulfate (as required by the Lahontan Regional Water Quality Control Board).

### Project Hydrology

The District’s Huston Creek WWTP has eight stormwater drains located in various areas of the facility. The facility is designed to allow no raw sewage or solids dewatering filtrate to go off-site. The drain in the solids dewatering building and outside at the biosolids loading area are both drained to an indoor sump which returns the water to the headworks for retreatment. The exterior drain is also covered by a metal canopy. The District employees are also trained in the District’s Spill Prevention, Control and Countermeasure (SPCC) plan.

Treated wastewater from the District’s Huston Creek Wastewater Treatment Plant is discharged to an outfall pipe which conveys the wastewater out of the Silverwood Lake watershed to Rancho Las Flores, located below Silverwood Lake and adjacent to the West Fork of the Mojave River, per a Lahontan Region California Regional Water Quality Control Board, Order No. 6-94-57 and Order No. 6-96-24A1. This area is within the Mojave Hydrologic Unit, Upper Mojave Hydrologic Area. This basin has received a High Priority ranking of 21.8 from the California Statewide Groundwater Elevation Monitoring (CASGEM) program, in an effort to begin groundwater elevation monitoring pursuant to Senate Bill X7-6. The Upper Mojave River Valley Groundwater Basin is a portion of an area adjudicated in 1996 setting the Mojave Water Agency as Watermaster (Crestline Village Water District, July 19, 2016).

### Impact Analysis

*a) Violate any water quality standards or waste discharge requirements?*

**Less Than Significant With Mitigation Incorporated.** The District is proposing to upgrade its existing wastewater treatment plant by adding a primary clarifier, backup generator, trickling filter recirculation pumps, and a sludge dewatering building with associated sludge dewatering and conveyance equipment.

### Construction

The RWQCB requires that dischargers whose construction projects disturb one (1) or more acres of soil or whose projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Discharges of Storm Water Associated

with Construction Activity Construction General Permit Order 2009-0009-DWQ. Construction activity subject to this permit includes clearing, grading and disturbances to the ground such as stockpiling, or excavation. The Construction General Permit requires the development of a Storm Water Pollution Prevention Plan (SWPPP) by a certified Qualified SWPPP Developer (QSD). The SWPPP would include BMPs to be implemented during and after project construction to minimize erosion and sedimentation of downstream watercourses.

Potential short-term surface water quality impacts related to Project construction activities include runoff of loose soils and/or construction wastes and fuels that could potentially percolate into the ground. Because the construction disturbance is anticipated to be less than 1 acre, the contractor is not subject to Construction General Permit Order 2009-0009-DWQ. Therefore, in order to ensure that the construction related impacts related to runoff of soil stockpiles and construction activities do not violate any water quality standards and remain at a level of less than significant, **Mitigation Measure GEO-1**, addressed in Section VII, will ensure that impacts remain less than significant. Mitigation Measures are located at the end of this section.

### Operations

The proposed Project would construct a single new clarifier that can be used while the existing two clarifiers are taken off-line for service. Therefore, the wastewater would continue to be treated in the same manner as the existing facility. The District operates under two permits to discharge its wastewater. The Project will not alter the existing operations or increase the amount of wastewater processed. Therefore, there will be a less than significant impact on water quality.

*b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?*

**Less Than Significant.** The CVWD provides water to the Crestline area primarily from the State Water Project. The District's Project would not result in an increased demand for or use of groundwater or interfere with groundwater recharge. The District is proposing to upgrade its existing wastewater treatment plant by adding a primary clarifier, backup generator, trickling filter recirculation pumps, and a sludge dewatering building with associated sludge dewatering and conveyance equipment. Water will be used for construction for dust control and other minor general construction uses. The CVWD, which uses a combination of groundwater and State Water Project water as its supply, has sufficient supplies to accommodate construction uses. The Project will not increase operations, therefore, no significant additional water supplies to the facility will be required after the Project is complete.

*c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner which would:*

- *result in substantial erosion or siltation onsite or offsite;*
- *substantially increase the rate or amount of surface water runoff in a manner which would result in flooding on or offsite;*
- *create or contribute to runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or*
- *impede or redirect flood flows?*

**Less Than Significant.** No stream or river exists on the Project site. The District's Huston Creek WWTP stormwater system is designed so that excess runoff is directed to a series of sumps and drainages that allow the runoff to either recirculate to the headworks or runoff onto designated adjacent areas. The addition of the clarifier

may require a small expansion of the adjacent driveway, which would not significantly increase the amount of impervious surface or off-site drainage. Therefore, the project will not substantially alter the existing drainage pattern of the area, therefore, there is a less than significant impact.

*d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?*

**No Impact.** The Project area is not near a lake or the coast, therefore, there is no impact to this criterion.

*e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?*

**Less Than Significant.** The Project will replace outdated components of an existing wastewater treatment plant. The District will continue to conduct sampling as required by its permits. The Project will not impact the Crestline Village Urban Water Management Plan because the Project is not a water-dependent project nor does the facility require additional water supplies to operate.

**Mitigation Measures:**

Mitigation Measure GEO-1, as identified in Section VII, will ensure impacts are less than significant. No new mitigation measures are required.

**Impact Conclusions:**

No significant adverse effects are anticipated with the inclusion of the above mitigation measure.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>XI. LAND USE AND PLANNING:</b> Would the project:				
a) Physically divide an established community?				X
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?				X

### **Environmental Setting**

The proposed Project is located in the unincorporated San Bernardino County mountain community of Crestline. Improvements will occur within the grounds of the existing Huston Creek Wastewater Treatment Plant (WWTP), which is situated approximately 2,700 feet north of the Crestline Sanitation office, located at 24516 Lake Drive, Crestline, CA 92325 (Figure 1 and 2). The closest residences are approximately 1,000 feet to the southwest along Zermatt Drive, and approximately 1,700 feet to the east at the end of Orchard Road.

Due to the natural elevation changes throughout the Crestline community, the existing Huston Creek WWTP is at a lower elevation than the adjacent surrounding community. However, the Huston Creek WWTP is difficult to view from the adjacent surrounding community due to the tall trees surrounding the plant. The plant can be viewed primarily from areas of the community east of the plant that are higher in elevation.

### **Impact Analysis**

a) *Physically divide an established community?*

**No Impact.** The entire Project will occur within the grounds of the existing Huston Creek WWTP. There is no impact.

b) *Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?*

**No Impact.** The proposed Project is located in the Crest Forest Community Plan of the County of San Bernardino's General Plan. The facility has existed in this community for decades, and the Project will not change the use of the facility. Therefore, there is no impact.

### **Mitigation Measures:**

No mitigation measures are required.

### **Impact Conclusions:**

No significant adverse impacts are identified or anticipated, and no mitigation measures are required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>XII. MINERAL RESOURCES:</b> Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?			X	
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?			X	

### **Environmental Setting**

Mineral extraction is an important component of San Bernardino's economy.

The State of California Department of Conservation classifies areas of important minerals:

MRZ-1: Areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence.

MRZ-2: Areas where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood for their presence exists.

MRZ-3: Areas containing mineral deposits, the significance of which cannot be evaluated from available data.

MRZ-4: Areas of no known mineral occurrences where geologic information does not rule out the presence or absence of significant mineral resources.

The Department of Conservation has mapped the areas of the Project as MRZ-4, where there are no known mineral occurrences. The geotechnical report prepared for the Project (Appendix E) has classified the soils as weathered bedrock.

### **Impact Analysis**

*a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?*

**Less Than Significant.** The Project area is classified as MRZ-4 by the State of California Department of Conservation, as are many areas within the within the San Bernardino Mountains region. The Project will export a small quantity of undocumented/unconsolidated fill off site and will import a small quantity of clean fill to utilize during construction. This will not result in a loss of any known mineral resources because none has been identified in the Project area. Therefore, there is a less than significant impact.

*b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?*

**Less Than Significant.** The Project area is classified as MRZ-4 by the State of California Department of Conservation. As discussed in XII(a), the Project will utilize a small quantity of construction fill materials. Therefore, there is a less than significant impact.

**Mitigation Measures:**

No mitigation measures are required.

**Impact Conclusion:**

No significant adverse impacts are identified or anticipated, and no mitigation measures are required.



	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>XIII. NOISE:</b> Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project site in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			X	
b) Generation of excessive groundborne vibration or groundborne noise levels?			X	
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				X

## **Environmental Setting**

### ***Noise Fundamentals***

Noise is generally described as unwanted sound. Sound is a physical disturbance in a medium, such as air, that is capable of being detected by the human ear. Sound waves in air are caused by variations in pressure above and below the static value of atmospheric pressure. The unit of sound pressure ratio to the faintest sound detectable to a person with normal hearing is called a decibel (dB) on a logarithmic scale. The “pitch” (high or low) of the sound is a description of the frequency, which is measured in Hertz (Hz). Most common environmental sounds are a composite of frequencies. A normal human ear can usually detect sounds within frequencies from 20 to 20,000 Hz. However, humans are most sensitive to frequencies in the range of 500 to 4,000 Hz.

Certain frequencies are given more “weight” during assessment because human hearing is not equally sensitive to all frequencies of sound. The A-weighted decibel (dBA) scale corresponds to the sensitivity range for human hearing. Noise levels capable of being heard by humans are measured in dBA. A noise level change of 3 dBA or less is barely perceptible to average human hearing. However, a 5 dBA change in noise level is clearly noticeable. A 10 dBA change is perceived as a doubling or halving of noise loudness, while a 20 dBA change is considered a “dramatic change” in loudness.

Sound from a source spreads out as it travels away from the source, and the sound pressure level diminishes with distance. Individual sound sources are considered “point sources” when the distance from the source is large compared to the size of the source (e.g., construction equipment, and turbines). Sound from a point source radiates hemispherically, which yields a 6 dB sound level reduction for each doubling of the distance from the source. If the sound source is long in one dimension, the source is considered a “line source,” (i.e., roadways and railroads). Sound from a line source radiates cylindrically, which typically yields a 3 dB sound level reduction for each doubling of the distance from the source.

The metrics for evaluating the community noise environment are based on measurements of the noise levels over a period of time. These metrics are used in order to characterize and evaluate the cumulative noise impacts. The

Community Noise Equivalent Level (CNEL) represents a 24-hour A-weighted sound level average from midnight to midnight, where sound levels during the evening hours of 7:00 p.m. to 10:00 p.m. have an added 5 dB weighting, and nighttime hours of 10:00 p.m. to 7:00 a.m. have an added 10 dB weighting.

The nearest residences exist approximately 1,000 feet west of the existing Huston Creek WWTP.

**Table 14**  
**Noise Standards for Stationary Sources**  
**County of San Bernardino**

<b>Table 83-2</b>		
<b>Noise Standards for Stationary Noise Sources</b>		
<b>Affected Land Uses (Receiving Noise)</b>	<b>7:00 a.m. - 10:00 p.m. Leq</b>	<b>10:00 p.m. - 7:00 a.m. Leq</b>
Residential	55 dB(A)	45 dB(A)
Professional Services	55 dB(A)	55 dB(A)
Other Commercial	60 dB(A)	60 dB(A)
Industrial	70 dB(A)	70 dB(A)
Leq = (Equivalent Energy Level). The sound level corresponding to a steady-state sound level containing the same total energy as a time-varying signal over a given sample period, typically one, eight or 24 hours.		
dB(A) = (A-weighted Sound Pressure Level). 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, placing greater emphasis on those frequencies within the sensitivity range of the human ear.		
Ldn = (Day-Night Noise Level). The average equivalent A-weighted sound level during a 24-hour day obtained by adding 10 decibels to the hourly noise levels measured during the night (from 10:00 p.m. to 7:00 a.m.). In this way Ldn takes into account the lower tolerance of people for noise during nighttime periods.		

Source: San Bernardino County Development Code, Division 3, Chapter 83.01, Section 83.02.080

Noise standards typically apply to permanent activities. The recommended noise exposure levels are established for permanent noise sources and receptors where noise can be generated over a 24-hour period with penalties applied for permanent noise generated during the night time hours. Construction related noise is short term and generally considered a nuisance. Construction noise is generally not of sufficient magnitude that is considered health threatening. Table 15 identifies typical construction noise levels.

**Table 15**  
**Typical Construction Equipment Noise Levels**

<b>Equipment</b>	<b>Noise Level (dBA) at 50 feet</b>
Backhoe	80
Concrete mixer	85
Pump truck	82
Crane, Mobile	85
Dozer	85
Excavator	85
Generator	82
Grader	85
Main lift	85
Loader	80
Paver	85
Roller	85
Scraper	85
Trucks	80-84

Source: FHWA 2009

### ***Ground Borne Vibration Fundamentals***

Ground-borne vibrations consist of rapidly fluctuating motions within the ground that have an average motion of zero. The effects of ground-borne vibrations typically only cause a nuisance to people, but at extreme vibration levels, damage to buildings may occur. Although ground-borne vibration can be felt outdoors, it is typically only an annoyance to people indoors where the associated effects of the shaking of a building can be notable. Ground-borne noise is an effect of ground-borne vibration and only exists indoors, since it is produced from noise radiated from the motion of the walls and floors of a room and may also consist of the rattling of windows or dishes on shelves. Several different methods are used to quantify vibration amplitude.

Sources of vibration typically include geotech drill rigs, excavators, dump trucks, backhoes, and other general construction equipment. According to the FTA guidelines, a vibration level (VdB) of 65 VdB is the threshold of perceptibility for humans. The FTA guidelines also state that, for a significant impact to occur, vibration levels must exceed 80 VdB during infrequent events (FTA 2006). Based on the approach set forth in the FTA guidelines, (Table 16) this analysis adopts a threshold of significance of 80 VdB for groundborne vibration impacts.

**Table 16**  
**Vibration Sources for Typical Construction Equipment**

<b>Equipment</b>	<b>Vibration Level at 25 feet (VdB)</b>
Large bulldozer	87
Caisson drilling	87
Loaded Trucks	86
Jackhammer	79
Small bulldozer	58

Source: FTA, 2011

### **Impact Analysis**

- a) *Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project site in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*

**Less Than Significant.** The nearest residence is approximately 1,000 feet west of the existing Huston Creek WWTP. In compliance with Section 83.01.080 of the County of San Bernardino's General Performance Standards, all grading and construction-related activities will be undertaken in between the hours of 7:00 a.m. and 7:00 p.m. Monday through Saturday and will not be undertaken anytime on Sundays or holidays. Therefore, noise generated by the heavy equipment will not violate County ordinances standards or requirements. The additional equipment is to replace existing equipment and therefore, noise associated with the operations of the facility will not increase substantially. The impact is less than significant.

- b) *Generation of excessive groundborne vibration or groundborne noise levels?*

**Less Than Significant.** Sources of Project vibration can include geotechnical drill rigs, excavators, dump trucks, backhoes, and other general construction equipment (Table 16). According to the Federal Transportation Administration (FTA) guidelines, a vibration level of 65 VdB is the threshold of perceptibility for humans at 25 feet. It is anticipated that the proposed Project would not involve pile-driving activities typically associated with ground-borne vibration. The nearest sensitive receptors include the residential area located approximately 1,000 feet west of the site. Some noise or vibration may occur during excavation for the footings for the building and the new clarifier. However, with sensitive receptors located over 1,000 feet west of the project, a less than significant impact is anticipated.

- c) *For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?*

**No Impact.** There are no private airstrips or airport land use plans near the site. San Bernardino International Airport, located 10 miles to the south, is the closest airport to the site. Therefore, there is no impact.

### **Mitigation Measures:**

No mitigation measures are required.

### **Impact Conclusion:**

No significant adverse impacts are identified or anticipated, and no mitigation measures are required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>XIV. POPULATION AND HOUSING:</b> Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?			X	
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				X

### **Environmental Setting**

The Project will occur within an existing wastewater treatment facility.

### **Impact Analysis**

- a) *Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?*

**Less Than Significant.** The Project involves replacing equipment that has reached the end of its useful life. The Project will add one clarifier and construct a new dewatering building. Once constructed, it is the intent of the District to utilize only the new dewatering building (taking the other one off-line but leaving it in place) and to use the new clarifier when the existing two need to be taken off-line for maintenance. Should the community grow beyond the capacity of the system, the District will have the existing facilities to utilize. However, the replacement of the equipment does not directly or indirectly introduce population growth to the area. A less than significant is anticipated.

- b) *Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?*

**No Impact.** The Project involves improvements to an existing wastewater treatment facility. The Project would not result in displacement of residential land uses; therefore, no impact would occur.

### **Mitigation Measures:**

No mitigation measures are required.

### **Impact Conclusions:**

No significant adverse impacts are identified or anticipated, and no mitigation measures are required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>XV. PUBLIC SERVICES:</b> a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?			X	
Police protection?			X	
Schools?				X
Recreation/Parks?				X
Other public facilities?			X	

### **Environmental Setting**

The community of Crest Forest has a population of approximately 10,770, according to the 2010 US Census within approximately 18 square miles, and includes the communities of Crestline, Cedar Pines Park, Valley of Enchantment, and the Lake Gregory Village area. The CSD service area encompasses a population of approximately 10,000, with approximately 4,700 sewer connections, approximately 99.6 square miles, and is supported by a variety of public services designed to maintain and improve the public welfare. Table 17 identifies the public services closest to the Project site.

Fire and Police Services are provided for the entire area by the County of San Bernardino.

**Table 17**  
**Public Services**

Public Service Type	Name/Address	Distance from Project Site
Fire Protection	San Bernardino County Fire Station 25 23407 Crest Forest Dr, Crestline, CA 92325	Approx. 2 miles southwest
Police Protection	San Bernardino County Sheriff's Dept. (Twin Peaks Substation) 26010 CA-189, Twin Peaks, CA 92391	Approx. 3 miles east
Schools	Rim of the World Unified School District Valley of Enchantment Elementary School 22836 Fir Ln, Crestline, CA 92325	Approx. 2 miles west
Recreation/Parks	Rim of the World Recreation and Park District Lake Gregory Community Center 24740 San Moritz Way, Crestline, CA 92325	Approx. 1.5 miles southwest

### **Impact Analysis**

- a) *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services: Fire Protection, Police Protection, Schools, Recreation/Parks, or Other Public Facilities.*

**Less Than Significant.** The Proposed project may utilize public services of Fire and Police in the event of an emergency such as a worker injury or theft. However, the needs of the proposed Project can be handled with the existing public services and not result in the need for any of the public service facilities to expand facilities. The proposed Project will not utilize schools or public parks, nor will the proposed Project increase the need for these facilities in a manner that would exceed existing capacity.

Additionally, existing traffic along Lake Drive and the intersection with the facility access road would be accommodated during project construction pursuant to a Traffic Control Plan to be prepared by the contractor. The Project is not expected to require closure of the main roadways. The proposed Traffic Control Plan may have potential to temporarily impact fire protection emergency service response times during construction. However, the Project would not result in significant threats of deterioration to the existing levels of service at public service facilities nor the need to build additional public service facilities. A less than significant impact to public services would occur as a result of the Project.

### **Mitigation Measures:**

No mitigation measures are required.

### **Impact Conclusion:**

No significant adverse impacts are identified or anticipated, and no mitigation measures are required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>XVI. RECREATION:</b>				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				X
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				X

### **Environmental Setting**

The Rim of the World Recreation and Park District encompasses a vast area of approximately 110 square miles, or more than 70,000 acres. Boundaries of the Park District includes a number of communities, Blue Jay, Crestline, Green Valley Lake, Lake Arrowhead, Rimforest and Running Springs. All communities within the Park District are unincorporated and therefore subject to land use and other authority from the County of San Bernardino.

### **Impact Analysis**

a) *Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?*

**No Impact.** The proposed Project is to upgrade an existing wastewater treatment facility. The proposed Project does not include the construction of recreational facilities and does not include a housing component that would result in population growth. There are no components of the project that would require the construction or expansion of new parks or recreational facilities, nor would development of the Proposed Project result in residential or commercial land uses generating population growth, facilitating increased use of existing facilities which would cause or accelerate substantial physical deterioration of existing facilities. Therefore, no impact related to recreational facilities would result from development of the Proposed Project

b) *Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?*

**No Impact.** See answer to subsection XVI(a), above

### **Mitigation Measures:**

No mitigation measures are required.

### **Impact Conclusion:**

No significant adverse impacts are identified or anticipated, and no mitigation measures are required.



	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>XVII. TRANSPORTATION / TRAFFIC:</b> Would the project:				
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?			X	
b) Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?			X	
c) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				X
d) Result in inadequate emergency access?			X	

### **Environmental Setting**

The District is proposing to upgrade its existing wastewater treatment plant. The proposed Project is located in the unincorporated San Bernardino County mountain community of Crestline. Improvements will occur within the grounds of the existing Huston Creek WWTP, which is situated approximately 2,700 feet north of the Crestline Sanitation office, located at 24516 Lake Drive, Crestline, CA 92325 (Figure 1 and 2).

The site is accessed from a private access road off of Lake Drive. The access road is not open to the public.

#### *Public Transit*

Public transportation is provided by Mountain Transit, the regional Public Transit operator for the San Bernardino Mountains and to San Bernardino. None of the routes are along the north side of Lake Drive, near the access road to the facility.

#### *Bike and Pedestrian Trails*

The off-street recreational trail system is primarily an established non-motorized trail around Lake Gregory. A portion of the trail follows the Lake Drive alignment on the north side of the lake, near the facility.

#### *Aviation*

The San Bernardino International Airport and Trade Center (SBIA) is located approximately 10 miles southeast of the Project site. The SBIA includes two distinct components: 1) the airport portions (and related facilities) of the former Norton Air Force Base, and 2) the Trade Center, which encompasses the non-airport related portions of the former base. The SBIA currently only serves air cargo and does not provide passenger service.

### **Impact Analysis**

- a) *Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?*

**Less Than Significant.** The Project site is located in an area without public access. There is no plan to provide public transit infrastructure to the area at this time. No pedestrian or bicycle infrastructure is proposed at the project site. And though the Project alignment is adjacent to the Lake Gregory Trail, no component of the work will interfere with the trail or use of the trail.

Construction equipment will utilize main roadways to the access road. No aspect of the Project will interfere with the area's circulation plan or transit or bike/pedestrian paths.

*b) Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?*

**Less Than Significant.** Prior to January 2019, traffic impacts were assessed using the LOS methodology. Senate Bill 743 (SB 743, 2013) required that the analysis be examined, and an alternative method adopted. In December 2018, the California Governor's Office of Planning and Research issued revised CEQA Guidelines Section 15064.3(b) which sets forth the criteria for analyzing transportation impacts. Specifically, this section of the Guidelines focuses on assessing land use projects and transportation projects through associated vehicle miles traveled (VMT), and not LOS. Subsection (b)(4) and subsection (c) allows a lead agency to choose the most appropriate method to evaluate VMT, but all agencies must have their methodology adopted by July 1, 2020, in accordance with SB 743.

The County of San Bernardino has not yet adopted methodology to determine VMT. The Project will occur within an existing facility that is accessed from an access road that is not accessible to the public. Therefore, the Project is consistent with CEQA Guidelines Section 15064.3(b).

*c) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?*

**No Impact.** The Project will occur within an existing wastewater treatment facility. No aspect of the Project includes re-designing public roads. Therefore, there is no impact to this criterion.

*d) Result in inadequate emergency access?*

**Less Than Significant.** The Project will occur within an existing wastewater treatment facility that is accessed by a road that is not accessible to the general public. Some interior roads of the facility may be blocked during construction. However, emergency vehicles will still be able to access all components of the Project facility should an emergency occur. Therefore, there will be a less than significant impact.

**Mitigation Measures:**

No mitigation measures are required.

**Impact Conclusions:**

No significant adverse impacts are identified or anticipated, and no mitigation measures are required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>XVIII. TRIBAL CULTURAL RESOURCES:</b>  Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or				X
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.		X		

### **Environmental Setting**

CRM Tech (CRM) completed a cultural resources records search to identify prehistoric or historic-period resources within one mile of the Project site (Appendix C). Native American input during the study did not identify any sites of traditional cultural value in the vicinity, and no notable cultural features were known to exist in the Project area throughout the historic period. Based on these considerations, the CRM research concluded that no “historic properties,” “historical resources,” or “tribal cultural resources” are present within or adjacent to the Project area.

In compliance with AB 52 regarding consultation with Native American Tribes, on July 10, the CSD sent a letter to the San Manuel Band of Mission Indians (SMBMI), the only potentially affected tribe on file with the CSD describing the proposed Project and its location, and requested a response regarding the potential for impacts to Tribal Cultural Resources to occur.

In response to CRM Tech’s outreach, the CSD also sent letters to other tribes describing the project and requested a response regarding potential impacts to Tribal Cultural Resources.

Through this effort, none of the tribes responded that there were tribal resources documented in the Project vicinity. The SMBMI responded that while they had no concerns with the Project’s potential to contain in situ cultural resources, the SMBMI requested mitigation measures to accommodate for the potential of unanticipated discovery.

### **Impact Analysis**

*a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k),*

**No Impact.** There are no resources that have been identified as eligible for listing to the California Register of Historic Places. Therefore, there is no impact.

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

**Less Than Significant With Mitigation Incorporated.** There are no resources supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. Therefore, there is no impact. However, based on AB 52 tribal consultation, the San Manuel Band of Mission Indians (SMBMI) requested that **Mitigation Measure TCR-1** and **TCR-2** be included to reduce potential impacts to potential Native American resources.

### **Mitigation Measures:**

**TCR-1** The San Manuel Band of Mission Indians Cultural Resources Department (SMBMI) shall be contacted, as detailed in CR-1, of any pre-contact cultural resources discovered during project implementation, and be provided information regarding the nature of the find, so as to provide Tribal input with regards to significance and treatment. Should the find be deemed significant, as defined by CEQA (as amended, 2015), a cultural resources Monitoring and Treatment Plan shall be created by the archaeologist, in coordination with SMBMI, and all subsequent finds shall be subject to this Plan. This Plan shall allow for a monitor to be present that represents SMBMI for the remainder of the project, should SMBMI elect to place a monitor on-site.

**TCR-2** Any and all archaeological/cultural documents created as a part of the project (isolate records, site records, survey reports, testing reports, etc.) shall be supplied to the applicant and Lead Agency for dissemination to SMBMI. The Lead Agency and/or applicant shall, in good faith, consult with SMBMI throughout the life of the project.

### **Impact Conclusions:**

No significant adverse effects are anticipated with the inclusion of the above mitigation measures.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>XIX. UTILITIES AND SERVICE SYSTEMS:</b> Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?			X	
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?			X	
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?			X	
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?			X	
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?				X

### **Environmental Setting**

The District is proposing to upgrade its existing wastewater treatment plant by adding a primary clarifier, backup generator, trickling filter recirculation pumps, and a sludge dewatering building with associated sludge dewatering and conveyance equipment.

The County of San Bernardino Public Works Department maintains the areas network of storm drains. Water is supplied by the Crestline Village Water District.

Southern California Edison (SCE) provides electrical utility service, and the Southern California Gas Company (SCG) provides natural gas.

Solid waste collection within the Project area is provided by Burrtec Mountain Disposal, a contractor to the County of San Bernardino Solid Waste Management Division of the Department of Public Works. The County of San Bernardino Solid Waste Management Division (SWMD) is responsible for the operation and management of the solid waste disposal system which consists of six regional landfills, eight transfer stations and five community collection centers throughout the County. The closest landfills to the Project site include the Mid-Valley Landfill in Fontana and the San Timoteo Landfill in Redlands.

## **Impact Analysis**

- a) *Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?*

**Less Than Significant.** The District is proposing to upgrade its existing wastewater treatment plant to replace equipment and facilities that have reached the end of their useful life. Wastewater services for construction workers will either be serviced by the restrooms that exist at the site, or “porta potties” that will be brought in by contractors. Therefore, there is a less than significant impact.

The electrical utility needs for the Project will be served by the existing utility grid infrastructure, and there will be no need to add electrical lines. The Project does include additional electrical switches and other mechanical devices on site to control the new equipment. The impact is not significant.

Water will be used for construction, primarily for dust control, and the District has ample rights and supplies to service the Project needs. These impacts are less than significant.

Therefore, the overall impact to this criterion is less than significant.

- b) *Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?*

**Less Than Significant.** The Project will only require water during construction. No additional water beyond what is currently used for operations is anticipated to be needed once the Project is operational. The District has ample water rights and supplies to support the water needs in the reasonably foreseeable future, during normal dry and multiple dry years. Therefore, the impact is less than significant.

- c) *Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?*

**Less Than Significant.** The Project will not require the use of wastewater treatment services beyond providing wastewater for construction workers during construction. Therefore, the impact is less than significant.

- d) *Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?*

**Less Than Significant.** Construction activities may generate small quantities of solid waste, inert materials, and green waste. All waste would be properly disposed of in accordance with all local statutes and regulations. Therefore, the impact is less than significant.

- e) *Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?*

**No Impact.** The small quantities of solid waste generated by the Project during construction activities would be handled in accordance with all applicable Federal, State, and local statutes and regulations. No impacts would occur under this criterion.

**Mitigation Measures:**

No mitigation measures are required.

**Impact Conclusion:**

No significant adverse impacts are identified or anticipated, and no mitigation measures are required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>XX. WILDFIRE:</b> If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?				X
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of wildfire?		X		
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?			X	
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?			X	

### **Environmental Setting**

The County of San Bernardino has identified the Project site as in a Fire Safety Overlay Area, a region designated by the Fire Authority as a wildfire risk area. It includes all the land generally characterized by areas varying from relatively flat to steep sloping terrain and with moderate to heavy fuel loading contributing to high fire hazard conditions. Present and future development within the Fire Safety Overlay is exposed to the impacts of wildland fires and other natural hazards primarily due to native fuel types, topography, and prevailing weather conditions such as Santa Ana winds. These factors contribute to the potential of extreme wild land fire behavior conditions.

The Crestline Sanitation District has adopted a Fire Disaster Readiness Plan to address operations in the event of a catastrophic fire in the Crestline mountain community.

### **Impact Analysis**

a) *Substantially impair an adopted emergency response plan or emergency evacuation plan?*

**No Impact.** All construction will occur within an existing wastewater treatment facility. No aspect of the Project will impair any emergency response plan or evacuation plan. Construction activities will follow the District's Fire Disaster Readiness Plan in the event of an emergency.

b) *Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of wildfire?*

**Less Than Significant With Mitigation Incorporated.** The Project area is identified as being within a high fire area as designated by the County of San Bernardino. And though the site maintains defensible fire space, sparks



from equipment during construction may ignite vegetation in the adjacent area of construction during extremely high winds. Therefore, **Mitigation Measure HAZ-4** is incorporated to ensure the potential risk is less than significant. The mitigation measure is located in Section IX of this Initial Study.

- c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?*

**Less Than Significant.** New utilities such as power and wastewater lines will be installed underground as part of construction. The existing facility has adequate defensible space with cleared areas and pavement. The Project components will be installed in a manner that maintains defensible space around the facility and will not require the construction of new cleared areas or require the construction of associated fuel breaks or other infrastructure that would exacerbate a fire risk or result in temporary ongoing impacts to the environment. Therefore, there is a less than significant impact.

- d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?*

**Less Than Significant.** The Project does not include substantial hillside grading that would expose people or structures to significant risks as a result of post-fire slope instability. A portion of the slope adjacent to the existing building will also be graded to install the new sludge building. However, the existing slope is gentle (approximately 5:1) and only minimal grading to accommodate the footprint of the building will be necessary. Stormwater runoff will remain the same throughout the facility. Therefore, there is a less than significant impact.

#### **Mitigation Measures:**

**Mitigation Measure HAZ-4, as identified in Section IX,** will ensure impacts are less than significant. No new mitigation measures are required.

#### **Impact Conclusion:**

No significant adverse effects are anticipated with the inclusion of the above mitigation measure.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>XXI. MANDATORY FINDINGS OF SIGNIFICANCE:</b>				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?		X		
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?		X		
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?		X		

SUBSTANTIATION:

- a) *Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?*

The District is proposing to upgrade its existing wastewater treatment plant by adding a primary clarifier, backup generator, trickling filter recirculation pumps, and a sludge dewatering building with associated sludge dewatering and conveyance equipment (proposed Project). Construction is estimated to occur in approximately 2020 and last approximately 24 months. The existing facilities in the proposed project area were constructed in 1952 (e.g. primary clarifiers) and 1984 (e.g. sludge handling facility). These facilities are reaching the end of their serviceable life, and are not designed to meet current engineering standards and community wastewater treatment demands.

Temporary impacts during Project activities are anticipated, but most were found to be less than significant or less than significant with the implementation of mitigation and/or standard best management practices.

A June 2019 biological resources field survey (Appendix B) concluded that the proposed Project will not affect State or federally listed endangered, threatened species because there is no habitat to support these species within, adjacent to, or in the broader vicinity of the Project area. In addition, the proposed Project will not adversely affect Critical Habitat as none exists within the Project area.

There are no established native resident or migratory wildlife corridors or wildlife nursery sites in the Project area. However, vegetation bordering and within the Project area has the potential to support nesting birds and migratory

birds protected under the MBTA. Therefore, to reduce potential impacts to nesting birds a mitigation measure has been recommended.

Mitigation measures are included in this document to address the potential impacts and reduce them to a less than significant impact level. With implementation of these measures, no significant adverse impacts to biological resources will result from project implementation.

Similarly, no cultural or tribal resources with significant values were found in the project footprint. However, a potential exists to accidentally expose subsurface cultural resources during construction. Contingency mitigation measures are included in this document to address this potential impact and reduce it to a less than significant impact level. With implementation of the cultural resources mitigation measures (including paleontological impacts), no significant adverse impacts to cultural resources will result from project implementation.

*b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?*

The Crestline area is not anticipated to experience new growth over the life of the Project, and no major developments have been identified that will occur during the same time as the CSD project. Impacts are not anticipated to be cumulatively considerable. This Project will not have a cumulative impact even if other projects are on-going in the area. Impacts were identified in the areas of Biological Resources, Cultural Resources, and Geology and Soils, Hazards and Hazardous Materials, and Wildfire. However, mitigation measures have been identified that, when implemented, will result in less than significant impacts.

The analysis of the data provided in this document concludes that implementation of the proposed Project will not result in impacts that are either individually or cumulatively considerable or significant when viewed in relation to past, present or probable future projects.

*c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?*

The proposed project will not result in any identifiable substantial adverse effects on humans either directly or indirectly. The goal of the proposed Project is to upgrade a significant wastewater treatment facility that services the community. Mitigation measures have been identified in areas of geology and soils, hazards and hazardous materials and wildfire, to ensure potential impacts to humans would be less than significant.

## 9 FEDERAL CROSS-CUTTER CRITERIA

The State Water Board, Division of Financial Assistance administers the CWSRF program. Due to the federal nexus with USEPA, federal laws and regulations (e.g. federal cross-cutters) apply to all projects pursuing CWSRF financing. Under the CWSRF Program, the Division under the State Water Board uses the CEQA document plus the federal cross-cutting documentation in place of a National Environmental Policy Act (NEPA) document in what is termed "CEQA-Plus" documentation. The State Board does not complete a NEPA review process, but rather completes the "NEPA-like" process of CEQA-Plus.

This section of the document contains the analysis consistent federal regulations, specifically, *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 CFR Sections 1500–1508)

issued by the Council on Environmental Quality (CEQ) (1970, as amended), the *Environmental Review Guide for Special Appropriation Grants* (EPA 2008), and the *Environmental Review Process Guidelines for State Revolving Fund Applicants* (SWRCB 2004).

## 9.1 Archaeological and Historic Preservation Act (APHA)

Passed and signed into law in 1974, this act amended and expanded the Reservoir Salvage Act of 1960. The AHPA required that Federal agencies provide for "...the preservation of historical and archeological data (including relics and specimens) which might otherwise be irreparably lost or destroyed as the result of...any alteration of the terrain caused as a result of any Federal construction project of federally licensed activity or program (Section 1)." This greatly expanded the number and range of Federal agencies that had to take archeological resources into account when executing, funding, or licensing projects. The Reservoir Salvage Act had required such attention only of Federal agencies, mainly the Corps of Engineers and the Bureau of Reclamation, that constructed reservoirs and related structures.

The AHPA built upon the national policy, set out in the Historic Sites Act of 1935, "...to provide for the preservation of historic American sites, buildings, objects, and antiquities of national significance...". The AHPA expanded the policy by focusing attention on significant resources and data, but does not require that they be shown to be of "national" significance. The connection between the 1935 statute and the AHPA is mentioned explicitly in the first section of the statute.

The statute is in the tradition of "salvage archaeology" as developed extensively in the River Basin Salvage Program from the late 1940s onwards. The impetus for AHPA was the destruction of archaeological sites throughout the country, frequently by actions funded or otherwise supported by Federal agencies, but not covered by the Reservoir Salvage Act, which required archeological salvage as part of dam projects (Davis 1972). The chief archaeological instigators of the statute were Carl Chapman of the University of Missouri and Charles R. McGimsey of the Arkansas Archeological Survey. The aim of the proponents of the act was to require all agencies of the Federal government to undertake archeology as part of their actions that would result in the destruction of archeological sites.

### *Determination of Effect*

CRM Tech (Appendix C) conducted a cultural resources assessment. In order to accomplish this objective, CRM TECH conducted a historical/archaeological resources records search, pursued historical and geoarchaeological background research, consulted with Native American representatives, and carried out a systematic field survey. The results of these research procedures indicate that the existing Huston Creek WWTP was originally built in 1952 but was upgraded and expanded repeatedly in various years between 1972 and 2001. Today, some of the early facilities are still extant and functional, most notably the existing primary clarifiers and the secondary clarifier, but almost all of the high-profile components of the plant, such as the buildings and structures, have been added since 1972, and the current appearance of the plant as a whole is predominantly modern in character.

Due to the lack of integrity to relate to the historic period, the Huston Creek WWTP is no longer a potential candidate for listing in the National Register of Historic Places or the California Register of Historical Resources. Therefore, it does not constitute a potential archaeological resource.

## 9.2 Federal Clean Air Act

The Clean Air Act (CAA), 42 U.S.C. §7401 et seq. (1970), is the comprehensive federal law that regulates air emissions from stationary and mobile sources.

For CWSRF program compliance, the following applies:

- *Attainment Areas- If the Project is located in attainment areas for federal criteria pollutants, then the applicant has satisfied the requirements.*
- *Nonattainment/Maintenance Areas- If the Project is located in nonattainment and/or maintenance areas for federal criteria pollutants, the applicant must conduct a Clean Air Act General Conformity Analysis:*
  - *Project conforms: Total emissions are below de minimis levels*
  - *Project does not conform and requires a general conformity determination: Total emissions are above de minimis levels will require the State Water Board to coordinate with the USEPA to develop a general conformity determination and complete a public review/comment process.*

### ***Determination of Effect***

The EPA has established national ambient air quality standards (NAAQS) for six of the most common air pollutants: carbon monoxide, lead, ozone, particulate matter, nitrogen dioxide, and sulfur dioxide which are known as criteria pollutants. The SCAQMD monitors levels of various criteria pollutants at 37 permanent monitoring stations and 5 single-pollutant source Lead (Pb) air monitoring sites throughout the air district.

The California Air Resource Board (CARB) established the California Ambient Air Quality Standards (CAAQS) for all pollutants for which the federal government has NAAQS and, in addition, establishes standards for sulfates, visibility, hydrogen sulfide, and vinyl chloride. However, at this time, hydrogen sulfide and vinyl chloride are not measured at any monitoring stations in the South Coast Air Basin (SCAB) because they are not considered to be a regional air quality problem. Generally, the CAAQS are more stringent than the NAAQS.

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

The Air Quality Impact Assessment (Appendix A) indicates that emissions resulting from the Project construction will not exceed criteria pollutant thresholds established by the SCAQMD for emissions of any criteria pollutant. Therefore, the SCAB is a non-attainment basin for federal criteria pollutants, but the total emissions are below de minimis levels (Appendix A).

## **9.3 Coastal Barriers Resources Act Resources**

The Coastal Barrier Resources Act (CBRA) was passed by Congress in 1982 to encourage conservation of hurricane-prone, biologically rich Coastal Barrier Resources System, which is a collection of undeveloped and ecologically sensitive barrier formations along the Atlantic and Gulf Coasts of the US, and the shore areas of the Great Lakes.. CBRA prohibits most new federal expenditures that encourage development or modification of coastal barriers and the adjacent wetlands, marshes, estuaries, inlets and near-shore waters. CBRS boundaries are shown on maps that were originally adopted by Congress and are maintained by the USFWS.

As of 2019, there are no designated Coastal Barrier Resource Systems in California.

### ***Determination of Effect***

There are no designated Coastal Barrier Resource Systems in California, nor does the Project occur within or near any coastal region. Therefore, there is no impact.

## **9.4 Coastal Zone Management Act**

Coastal Zone Management Act was passed by Congress in 1972 and is administered by National Oceanic and Atmospheric Administration, (NOAA). It provides for the management of the nation's coastal resources, including the Great Lakes. The goal is to "preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone."

Federal agencies must ensure that projects in coastal areas are consistent with the state coastal zone management plans approved by the United States Department of Commerce.

For CWSRF program compliance, the following applies:

- *Applicants must consult early with the state Coastal Zone Management Agency (California Coastal Commission, the San Francisco Bay Conservation and Development Commission) to ensure consistency with the state coastal zone management plan, including identifying appropriate project locations, and provide SWRCB with all documentation.*
- *State Water Board required to consult with the California Coastal Commission and/or the San Francisco Bay Conservation and Development Commission, to obtain a consistency determination (if the applicant has not yet completed the process).*

### ***Determination of Effect***

No aspect of the Project occurs within or near a coastal area. There is no impact.

## **9.5 Federal Endangered Species Act (ESA)**

The USFWS administers the federal ESA of 1973. The ESA provides a legal mechanism for listing species as either threatened or endangered, and a process of protection for those species listed. Section 9 of the ESA prohibits "take" of threatened or endangered species. The term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in such conduct. "Take" can include adverse modification of habitats used by a threatened or endangered species during any portion of its life history. Under the regulations of the ESA, the USFWS may authorize "take" when it is incidental to, but not the purpose of, an otherwise lawful act. Take authorization can be obtained under Section 7 or Section 10 of the act.

For CWSRF Program compliance, the following criteria apply:

***Biological Assessment*** - *Applicant must submit a biological assessment to determine any direct/indirect effects to federally listed (threatened or endangered) species or critical habitat*

- *Required to review current lists of species (less than one year old) expected to be in the project area and type of suitable habitat:*
  - *U.S. Fish and Wildlife Service (USFWS) species list*

- *California Department of Fish and Wildlife, California Native Diversity Database (CNDDDB)*
- *California Native Plant Survey*
- *Biological survey (less than one year old) must include:*
  - *Results of site surveys and surrounding area stating if any species were observed*
  - *Identification of designation critical habitat and known species range*
  - *Analysis of potential impact to species*
  - *Determinations for effect on listed species*
  - *Identification of measures to reduce, avoid and minimize impacts*

### ***Determination of Effect***

A Biological Resources Assessment was prepared for this Project (Jericho, July 2019 and is located in Appendix B). Section IV of this document represents the findings and analysis under CEQA.

No federally listed species were not observed during the field survey nor are any expected to occur. No impact to federally protected species or habitats will result from implementation of the proposed Project.

## **9.6 Environmental Justice**

In July 1964 Congress passed the Civil Rights Act of 1964. Title VI of the Civil Rights Act states that *"No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance."*

In February 1994, President Clinton issued Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." In a separate memorandum, President Clinton identified Title VI as one of several federal laws already in existence that can help "to prevent minority communities and low-income communities from being subject to disproportionately high and adverse environmental effects."

For CWSRF Program compliance, the following criteria apply:

Will the Project:

- *Create new disproportionate impacts on minority, low- income, or indigenous populations;*
- *Exacerbate existing disproportionate impacts on minority, low-income, or indigenous populations; or*
- *Present opportunities to address existing disproportionate impacts on minority, low-income, or indigenous populations that are addressable through the project.*

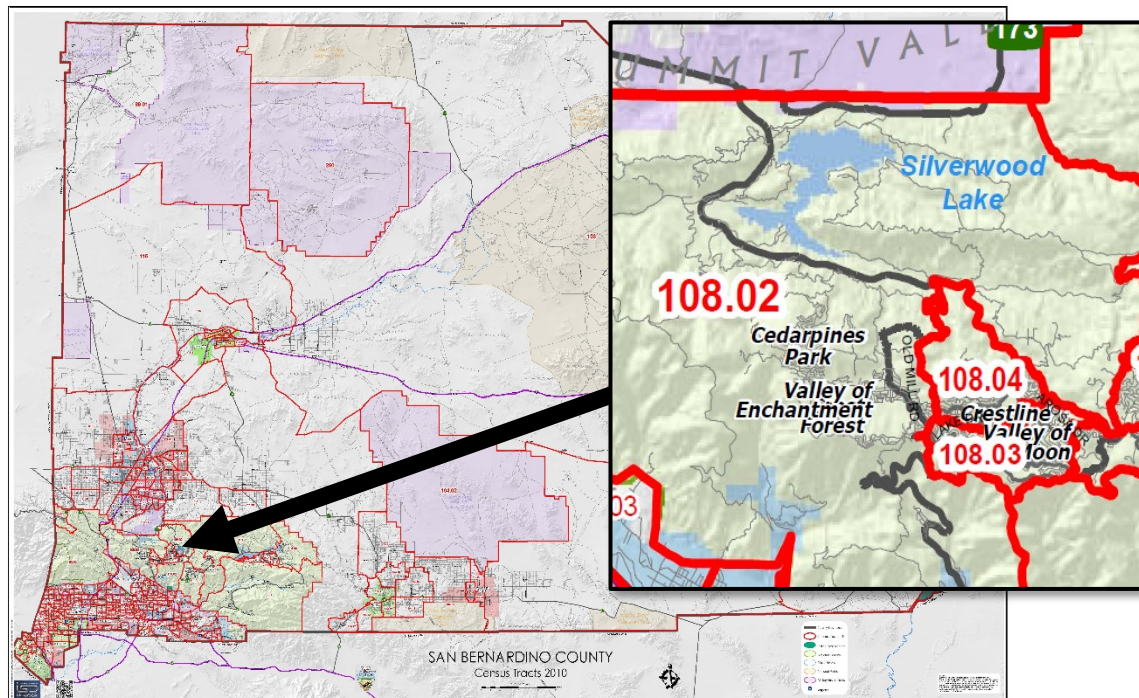
### ***Determination of Effect***

The 2012-2016 American Community Survey City and Census Designated Place (CDP) Estimates identified the Crestline CDP as a Small Disadvantaged Community. However, the 2013-2017 American Community Survey City and Census Designated Place (CDP) Estimates identified that Crestline was no longer designated as a Small Disadvantaged Community. The community profile is provided in the following tables:

**Table 18**  
**CDP Estimates**

CDP Year	Population		MHI		Households		Small Disadvantaged Community?	Small Severely Disadvantaged Community?
	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error		
2012-2016	8,900	+/- 818	\$ 49,986	+/- 10,229	7,380	+/- 180	Yes	No
2013-2017	9,581	+/- 994	\$ 56,692	+/- 5,214	7,481	+/- 164	No	No

The CDP Estimates are based on the 2010 Census tracts, identified in the graphic below.



Based on the census tracts, the community profile in relation to the CSD's service area is further defined as follows:



**Table 19**  
**Census Data – CDP Estimates**  
**2012-2016 American Community Survey**

Census Tract / Block Group - 2010	Population		MHI		Households	
	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error
Census Tract 108.02, San Bernardino County, California (Cedarpines Park/Valley of Enchantment, Silverwood Lake) – <i>Only Valley of Enchantment and portion of Silverwood Lake in CSD Service Area</i>	5,058	+/- 640	\$ 48,358	+/- 12,834	3,090	+/- 100
Census Tract 108.03, San Bernardino County, California (Valley of the Moon, Dart Canyon) – <i>Not in CSD Service Area</i>	2,655	+/- 426	\$ 59,479	+/- 24,426	2,621	+/- 36
Census Tract 108.04, San Bernardino County, California (Crestline) – <i>Fully within CSD Service Area</i>	2,506	+/- 394	\$ 48,484	+/- 10,684	1,973	+/- 42

**Table 20**  
**Census Data – CDP Estimates**  
**2013-2017 American Community Survey**

Census Tract / Block Group - 2010	Population		MHI		Households	
	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error
Census Tract 108.02, San Bernardino County, California (Cedarpines Park/Valley of Enchantment, Silverwood Lake) – <i>Only Valley of Enchantment and portion of Silverwood Lake in CSD Service Area</i>	4,927	+/- 778	\$ 56,286	+/- 9,034	3,112	+/- 115
Census Tract 108.03, San Bernardino County, California (Valley of the Moon, Dart Canyon) – <i>Not in CSD Service Area</i>	3,037	+/- 669	\$ 69,327	+/- 13,794	2,625	+/- 43
Census Tract 108.04, San Bernardino County, California (Crestline) – <i>Fully within CSD Service Area</i>	2,720	+/- 380	\$ 48,194	+/- 12,309	1,997	+/- 43

As identified in Tables 19 and 20, only a portion of Census Tract 108.2 and the entire portion of Census Tract 108.4 are serviced by the CSD. These census tracts typically have lower incomes and population.

The US Department of Education’s Elementary and Secondary Education Act (ESA) provides financial assistance to schools with a student base that are lower-income. The Rim of the World Unified School District (Rim USD) is the school district that serves the CSD wastewater service area. In Fiscal Year 2017, the Rim USD received over \$1 million in Title 1 funding.

The District was formed on January 16, 1947 to provide sewer services to the Lake Gregory area of the San Bernardino Mountains. The District collects, treats and disposes of approximately 187 MG per year of domestic wastewater from the sewered areas of Crestline, Lake Gregory, Valley of Enchantment, and the Silverwood Lake

recreational areas, all located in unincorporated areas of San Bernardino County (Figure 3). The CSD serves a population of approximately 10,000, with approximately 4,700 sewer connections.

The District is proposing to upgrade its existing wastewater treatment plant by adding a primary clarifier, backup generator, trickling filter recirculation pumps, and a sludge dewatering building with associated sludge dewatering and conveyance equipment as these facilities are reaching the end of their serviceable life. All Project construction will occur within the grounds of the existing wastewater treatment plant.

Therefore, no aspect of the Project will create new wastewater treatment facilities that will, nor will improvements to the existing, exacerbate existing impacts on minority, low-income, or indigenous populations.

## 9.7 Farmland Protection Policy Act

Congress enacted the Farmland Protection Policy Act (FPPA) as a subtitle of the 1981 Farm Bill. The purpose of the law is to “...minimize the extent to which Federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses...” (P.L. 97-98, Sec. 1539-1549; 7 U.S.C. 4201, et seq.). The FPPA also stipulates that federal programs be compatible with state, local and private efforts to protect farmland. For the purposes of the law, federal programs include construction projects—such as highways, airports, dams and federal buildings—sponsored or financed in whole or part by the federal government, and the management of federal lands. The U.S. Department of Agriculture’s Natural Resources Conservation Service (NRCS) is charged with oversight of the FPPA.

Federal agencies must consider a project’s effect on agricultural land and take alternative/mitigating measures to ensure valuable farmland is preserved.

Important farmland includes:

- Unique and Prime farmland
- Farmland of local and statewide importance
- Farmland under a Williamson Act Contract (important farmland)

For CWSRF Program compliance, the following criteria apply:

- *Determine if important farmland is located within project area, and if the project will result in a temporary or permanent conversion of important farmland to non-agricultural use.*
- *Notify (via letter) the United States Department of Agriculture, local and state soil conservationist representatives, of the project and proposed measures identified to avoid, minimize, or mitigate farmland impacts.*

### ***Determination of Effect***

The Project occurs within the boundaries of an existing wastewater treatment facility which is not located on or surrounded by any important farmlands. Therefore, there is no impact.

## 9.8 Fish and Wildlife Coordination Act (FWCA)

The FWCA requires coordination with the USFWS and the California Department of Fish and Wildlife when a project will impact a body of water.

### *Determination of Effect*

The Project occurs within the boundaries of an existing wastewater treatment facility which is not located on or surrounded by bodies of water, nor will the Project components propose changes to any body of water. Therefore, there is no impact and no coordination is required.

## 9.9 Flood Plain Management

Floodplain management is the operation of a community program of preventive and corrective measures to reduce the risk of current and future flooding, resulting in a more resilient community, according to the Federal Emergency Management Agency (FEMA). These measures take a variety of forms, are carried out by multiple stakeholders with a vested interest in responsible floodplain management and generally include requirements for zoning, subdivision or building, building codes and special-purpose floodplain ordinances.

For CWSRF Program compliance, the following criteria apply:

- *Evaluate and determine project location with respect to 100-year floodplain (FEMA maps).*
- *If project is located in a flood plain, the applicant must prepare:*
  - *A flood plain assessment, including assessing flooding impacts, alternative locations, and measures/design modifications to reduce flooding impacts; and*
  - *And publicly notify reasons for proposing the project in a flood plain.*
- *CWSRF Program staff makes a finding on the Executive Order No. 11988 compliance and must notify FEMA (FEMA may provide additional measures) via letter.*

### *Determination of Effect*

The Project occurs within the boundaries of an existing wastewater treatment facility, which is not identified on FEMA maps as being within a 100-year floodplain. Therefore, there is no impact.

## 9.10 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) is the primary law governing marine fisheries management in U.S. federal waters. First passed in 1976, the Magnuson-Stevens Act fosters long-term biological and economic sustainability of our nation's marine fisheries out to 200 nautical miles from shore. The goals of the act include: prevent overfishing; rebuild overfished stocks; increase long-term economic and social benefits; use reliable data and sound science; conserve essential fish habitat; ensure a safe and sustainable supply of seafood.

For CWSRF Program compliance, the following criteria apply:

- *Applicants must provide Essential Fish Habitat (EFH) Assessment and maps (from the National Marine Fisheries Service [NMFS]) to identify designated EFH in their project areas and assess if the project will have the potential to adversely impact EFH.*
- *Must consult with NMFS for any adverse impacts to EFH.*
- *If EFH may be adversely impacted, ERU must prepare a letter and enclose any applicable surveys (EFH Assessment) documents for USEPA to initiate EFH consultation with the NMFS.*
- *NMFS must provide concurrence (informally or written) and may provide EFH Conservation recommendations, which will be included as a special condition of the applicant's CWSRF financing agreement*

### ***Determination of Effect***

The Project does not involve fisheries or occur within 200 nautical miles out from shore. Therefore, there is no impact.

## **9.11 Migratory Bird Treaty Act (MBTA)**

The federal Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C 703-711) provides protection for nesting birds that are both residents and migrants whether or not they are considered sensitive by resource agencies. The MBTA prohibits take of nearly all native birds. The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed under 50 CFR 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). The direct injury or death of a migratory bird, due to construction activities or other construction-related disturbance that causes nest abandonment, nestling abandonment, or forced fledging would be considered take under federal law. The USFWS, in coordination with the CDFW administers the MBTA. CDFW's authoritative nexus to MBTA is provided in FGC Sections 3503.5 which protects all birds of prey and their nests and FGC Section 3800 which protects all non-game birds that occur naturally in the State.

For CWSRF Program compliance, the following criteria apply:

- *Applicants must address potential impacts to migratory, raptor and fully protected species in their Biological Assessment or CEQA document. A survey must be completed to determine the presence of nests and impacts from construction noise, vibration, modification of habitat (tree removal, riparian vegetation) must be addressed.*
- *Must consult with the USFWS (as well as the Department of Fish and Wildlife under Fish and Game codes 3511 and 3513) to identify appropriate measures for mitigating/avoiding impacts to species.*

### ***Determination of Effect***

Jericho Systems, Inc (Jericho) completed a Biological Resources Assessment for the Project that consisted of a literature review and a field survey conducted on June 20, 2019. The conclusion was that the proposed Project will not affect State or federally listed endangered, threatened species because there is no habitat to support these species within, adjacent to, or in the broader vicinity of the Project area. In addition, the proposed Project will not adversely affect Critical Habitat as none exists within the Project area.

Vegetation bordering and within the Project area has the potential to support nesting birds and migratory birds protected under the MBTA. Therefore, pre-construction surveys are warranted and recommended should project implementation occur during the bird nesting season. **Mitigation Measure BIO-1** is included to reduce potential impacts to nesting birds in the vegetation bordering the facility.

## 9.12 National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA) requires Federal agencies, to consider the effects of Federally funded projects on historic properties and to afford the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on such projects prior to the expenditure of any Federal funds.

For CWSRF Program compliance, the following criteria apply:

- *Applicant must submit a Section 106 report including:*
  - *Identifying the area of potential effects (APE)*
  - *Current records search (no more than one year old & ½ mile radius)*
  - *Native American consultation*
  - *Draft consultation letter for State Historic Preservation Officer (SHPO)*
- *Cultural Resources Officer for the State Water Board reviews the cultural documents submitted by applicants to see if sufficient information has been provided to support Section 106 findings.*
- *May initiate Section 106 NHPA consultation with the SHPO if “no effect” finding can not be made*

### ***Determination of Effect***

CRM Tech (Appendix C) conducted a cultural resources assessment. In order to accomplish this objective, CRM TECH conducted a historical/archaeological resources records search, pursued historical and geoarchaeological background research, consulted with Native American representatives, and carried out a systematic field survey. The results of these research procedures indicate that the existing Huston Creek WWTP was originally built in 1952 but was upgraded and expanded repeatedly in various years between 1972 and 2001. Today, some of the early facilities are still extant and functional, most notably the existing primary clarifiers and the secondary clarifier, but almost all of the high-profile components of the plant, such as the buildings and structures, have been added since 1972, and the current appearance of the plant as a whole is predominantly modern in character.

Due to the lack of integrity to relate to the historic period, the Huston Creek WWTP is no longer a potential candidate for listing in the National Register of Historic Places or the California Register of Historical Resources. Therefore, it does not constitute a potential “historic property”/“historical resource,” and requires no further consideration in the Section 106- and CEQA-compliance processes. No other properties of historical or prehistoric origin were encountered within or adjacent to the APE during this study, and the subsurface sediments within the vertical extent of the APE, consisting mostly of artificial fill and granitic bedrock, appear to be very low in sensitivity for potentially significant archaeological remains.

Based on these findings, and pursuant to 36 CFR 800.4(d)(1) and Calif. PRC §21084.1, CRM TECH recommends to the CSD and the SWRCB a conclusion that *no “historic properties” or “historical resources” will be affected by the proposed undertaking*. No further cultural resources investigation is recommended for the undertaking unless

project plans undergo such changes as to include areas not covered by this study. However, mitigation measures are in place in the event an unanticipated discovery is made during construction.

### 9.13 Protection of Wetlands

Protection of Wetlands – Executive Order 11990: The purpose of Executive Order (EO) 11990 is to "minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands". To meet these objectives, the Order requires federal agencies, in planning their actions, to consider alternatives to wetland sites and limit potential damage if an activity affecting a wetland cannot be avoided. The procedures require the determination of whether or not the proposed project will be in or will affect wetlands. If so, a wetlands assessment must be prepared that describes the alternatives considered. The procedures include a requirement for public review of assessments. The evaluation process follows the same 8 steps as for EO 11988, Floodplain Management.

Wetlands are the at transition between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. In general, wetlands have one or more of the following three attributes: 1) at least periodically, the land supports predominantly hydrophytes; 2) soils are hydric meaning undrained; and 3) the substrate is saturated with water or covered by shallow water at some time during the growing season of each year. Under current guidelines, a jurisdictional wetland under the CWA's Section 404, must display all three wetland characteristics: hydrophytic vegetation, hydric soils, and wetland hydrology. In California however, a jurisdictional wetland needs to meet only one of these parameters.

For CWSRF Program compliance, the following criteria apply:

- *U.S. Army Corps of Engineers (USACE) has a "no net loss of wetlands" policy. Therefore, applicants must comply by completing and submitting:*
  - *Biological surveys which addresses potential impacts to wetlands*
  - *Potential affects to wetlands requires:*
    - *A Preliminary Wetland Delineation Report*
    - *Field verification report done by the USACE*
    - *Section 401 WQ Certification (Regional Water Board) approval*
    - *USACE Permit application for CWA Section 404 permits (only need 401 if 404 required)*
- *If consultation with the USACE and USFWS is required, CWSRF Program staff must initiate consultation via letter and forward all supporting documentation, including information on alternative sites and measures to reduce or avoid impacts to wetlands, other waters and waters of the US.*

#### ***Determination of Effect***

A Biological Resources Assessment was prepared for the site that addressed the potential for waters and wetlands to be present on-site, and is provided in Appendix B. However, no wetlands were found; therefore, there is no impact.

### 9.14 Rivers and Harbors Act, Section 10

This section identifies that the creation of any obstruction not affirmatively authorized by Congress, to the navigable capacity of any of the waters of the United States is hereby prohibited; and it shall not be lawful to build or commence the building of any wharf, pier, dolphin, boom, weir, breakwater, bulkhead, jetty, or other structures in any port, roadstead, haven, harbor, canal, navigable river, or other water of the United States, outside established

harbor lines, or where no harbor lines have been established, except on plans recommended by the Chief of Engineers and authorized by the Secretary of War; and it shall not be lawful to excavate or fill, or in any manner to alter or modify the course, location, condition, or capacity of, any port, roadstead, haven, harbor, canal, lake, harbor of refuge, or enclosure within the limits of any breakwater, or of the channel of any navigable water of the United States, unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of War prior to beginning the same.

### ***Determination of Effect***

The Project does not involve the construction of any structure in navigable waters. All project components occur within an existing wastewater treatment facility. Therefore, there is no impact.

## **9.15 Safe Drinking Water Act, Sole Source Aquifer Protection**

EPA defines a sole source aquifer (SSA) as one where:

- The aquifer supplies at least 50 percent of the drinking water for its service area
- There are no reasonably available alternative drinking water sources should the aquifer become contaminated.

The Sole Source Aquifer program enables EPA to designate an aquifer as a sole source of drinking water and establish a review area. EPA then reviews proposed projects that will both:

- Be located within the review area
- Receive federal funding

The review area includes the area overlying the SSA. It may also include the source areas of streams that flow into the SSA's recharge zone. EPA's review is intended to ensure that the projects do not contaminate the SSA.

For CWSRF Program compliance, the following criteria apply:

- *All applicants must determine if the project is located in a USEPA designated sole source aquifer (SSA).*
  - *If is located in SSA, the Applicant must provide documentation of surveys done to determine if a project could contaminate a sole source aquifer (normally done in consultation with the Department of Public Health).*
  - *In consultation with DPH and USEPA, applicant must identify alternative site(s) or identify adequate mitigation measures. Those measures and/or alternative sites must be integrated into the project design.*

### ***Determination of Effect***

The Project is not located in a USEPA designated sole source aquifer.

The Project is not located within an adjudicated groundwater basin. The State Department of Water Resources (DWR) classifies this portion of the San Bernardino Mountains as 'non-water bearing' and therefore is not included on the California Statewide Groundwater Elevation Monitoring (CASGEM) priority list, or subject to the 2014 Sustainable Groundwater Management Act (SGMA). The area is also not included in DWR "Bulletin 118" list of

groundwater basin data. The San Bernardino Mountains consist of a complex of crystalline granitic rocks that have intruded metaplutonic and metasedimentary rocks (Crestline Village Water District, July 19, 2016). Thus, there are no unconsolidated sediments or traditional groundwater basins in this mountainous area. Instead, groundwater is confined to open fractures in the hard metamorphic and granitic mountain rocks underlying the Project area. Groundwater is fed by rainfall and snow seeping into fractures along drainage courses, and may discharge down-gradient as a spring, enter the bottom of a drainage feeding a flow, or continue to move down-gradient beneath the surface (Crestline Village Water District, July 19, 2016).

The fractured rock aquifers are very different than traditional alluvial groundwater basins in that they produce far smaller volumes, are tightly correlated with precipitation, and there is no “basin” of water to measure in order to calculate things like a “safe yield” or “overdraft”. Water is transmitted only through cracks and fractures from the folding and faulting of the rock over time; thus, explaining the difficulty in their ability to collect and store water. (Crestline Village Water District, July 19, 2016).

Water to the Crestline area, including the Project area, is supplied by the Crestline Village Water District (CVWD). The CVWD serves most water from the State Water Project through purchases from the Crestline-Lake Arrowhead Water Agency and by drawing from up to 50 groundwater wells in various locations of the fractured bedrock in the Crestline area.

## 9.16 Wild and Scenic Rivers Act

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

This Act prohibits federal assistance (including financing) for water resource projects that would have a direct and adverse effects on, invade, or unreasonably diminish, the special values of a designated wild and scenic river. The Act also requires consultation with state (California State Parks) and federal authorities (National Park Service, US Forest Service, Bureau of Land Management) with jurisdiction over the rivers in the project area, and evaluate alternatives.

As of 2019, there were 22 water body sections have a wild and scenic river designation in California.

For CWSRF Program compliance, the following criteria apply:

- *Alternatives that will result in adverse effect on the wild and scenic designation of the river, must be eliminated. Applicant must identify other alternatives.*

### ***Determination of Effect***

The Project area is not near or within any of the water bodies that have a wild and scenic river designation. Therefore, there is no impact.



## **9.17 Alternatives Analysis**

Under the CWSRF Program, the Division under the State Water Board uses the CEQA document plus the federal cross-cutting documentation in place of a National Environmental Policy Act (NEPA) document in what is termed “CEQA-Plus” documentation. The State Board does not complete a NEPA review process, but rather completes the “NEPA-like” process of CEQA-Plus. CEQA does not require an Alternatives Analysis. However, an Alternatives Analysis is a requirement of the CWSRF Program.

For this Project, the following alternatives were explored.

### **Alternative 1 - Southeast Driveway Widening**

An alternative driveway design was evaluated to the southeast of the existing primary clarifiers to widen the road for vehicular traffic. All technical studies performed for the Project assumed that this alternative would be utilized.

However, after land survey data was analyzed with design engineering, it was determined that even with the new primary clarifier adjacent to this southeast driveway, the existing southeast driveway would maintain a 15-foot width and would not need to be widened to allow for vehicular traffic. Therefore, in further designs, the southeast driveway was not widened outside the existing fence line of the Huston Creek Wastewater Treatment Plant, and this alternative was not selected.

### **Alternative 2 - Primary Clarifier Location Alternative**

An alternative primary clarifier location was evaluated to the northwest of the existing primary clarifiers. This site was determined to be not feasible due to the fact that it would restrict the access road to the new and existing sludge dewatering building and create difficult driving routes for hauling trucks. Therefore, this alternative was dismissed.

### **Alternative 3 – Construct Modifications Adjacent to Existing Facilities (Preferred Alternative)**

Under Alternative 3, the CSD would add a primary clarifier, backup generator, trickling filter recirculation pumps, and a sludge dewatering building with associated sludge dewatering and conveyance equipment (proposed Project) adjacent to the existing facilities on site and within the existing developed footprint. The primary clarifier could be located adjacent to the existing clarifiers and no modifications to the facility footprint would be required. The new sludge building could be located adjacent to the existing sludge building and no modifications to the existing site footprint is required.

### **Alternative 4 - No Action Alternative**

Under the No Action Alternative, the Proposed Action would not be undertaken. No facility upgrades would be made and public health and safety may be compromised due to increased potential for overflows and equipment breakdowns.

### **Analysis of Alternatives**

In all alternatives scenarios (except Alternative 4 – No Action), the Project components would be installed within the existing wastewater treatment plant. The alternatives merely explored placement of the various Project components.

Alternatives 1 and 2 are considered minor modifications to Alternative 3 and do not represent significant deviations from the Alternative 3 scope of work. Alternative 4 assumes there would be No Project, and there would be no environmental impact associated with Alternative 4.

Using the CEQA Guidelines and analysis in the Initial study, Table 21 represents the potential impacts of the various alternatives compared to the Alternative 3, the Proposed Project. As shown in Table 21, Alternatives 1 and 2 would have no greater or lesser impact on resources than Alternative 3 primarily because they are minor modifications of the Alternative 3 which is the Preferred Project.

## 10 FINDINGS

Therefore, based on the findings in this Initial Study, the Crestline Sanitation District, acting as the CEQA lead agency for this proposed project, will process a Mitigated Negative Declaration (MND) as the appropriate CEQA environmental determination for the proposed project. The District will issue a Notice of Intent to Adopt a Mitigated Negative Declaration and circulate the MND package for review for the required 30-day period. Following receipt of comments, the District will compile responses to any comments and prepare a final MND package for consideration by District. Based on the final MND package, the District will consider whether implementation of the proposed project as defined in this document can proceed as determined by the District at the completion of the review process.

If you or your agency comments on this proposed MND, you or your agency will be provided responses to comments and notified of the date of the District's final review and decision. A decision by the District to approve the MND would be based on all of the information available in the whole of the record before the District at the conclusion of the CEQA environmental review process for this proposed project. Completion of the CEQA review process would allow implementation of the proposed project in accordance with any approved mitigation measures and conditions of approval for the project.

**Table 21**  
**Alternatives Analysis**

Topic	Alternative 3 (Preferred Alternative)	Alternative 1 SE Drive Widening	Alternative 2 Primary Clarifier Location	Alternative 4 No Project
Aesthetics	Less Than Significant	Same	Same	No Impact
Agriculture and Forestry	No Impact	Same	Same	Same
Air Quality	Less Than Significant	Same	Same	No Impact
<b>Biological Resources</b>	<b>Less Than Significant With Mitigation.</b> Pre-construction surveys for nesting birds required.	Same	Same	No Impact
<b>Cultural Resources</b>	<b>Less Than Significant With Mitigation.</b> Provisions for unanticipated discoveries required.	Same	Same	No Impact
Energy	Less Than Significant	Same	Same	No Impact
<b>Geology/Soils</b>	<b>Less Than Significant With Mitigation.</b> Provisions for erosion control, pre-construction borings, fill soil removal, unanticipated discovery of Paleo resources	Same	Same	No Impact
Greenhouse Gas	Less Than Significant	Same	Same	No Impact
<b>Hazards</b>	<b>Less Than Significant With Mitigation.</b> Provisions for unanticipated spills, and welding restrictions in high winds	Same	Same	No Impact
<b>Hydrology/Water Quality</b>	<b>Less Than Significant With Mitigation</b> Same as Geology/Soils measures	Same	Same	No Impact
Land Use and Planning	No Impact	Same	Same	Same
Mineral Resources	Less Than Significant	Same	Same	No Impact
Noise	Less Than Significant	Same	Same	No Impact
Population/Housing	Less Than Significant	Same	Same	No Impact
Public Service	Less Than Significant	Same	Same	No Impact
Recreation	No Impact	Same	Same	Same
Transportation	Less Than Significant	Same	Same	No Impact
<b>Tribal Resources</b>	<b>Less Than Significant With Mitigation.</b> Provisions for unanticipated discovery	Same	Same	No Impact
Utilities	Less Than Significant	Same	Same	No Impact
<b>Wildfire</b>	<b>Less Than Significant With Mitigation.</b> Welding restrictions in high winds	Same	Same	No Impact

## 11 SUMMARY OF MITIGATION MEASURES

The following mitigation measures were identified to reduce impacts to less than significant:

### **BIOLOGICAL RESOURCES**

- BIO 1** Bird nesting season generally extends from February 1 through September 15 in southern California and specifically, April 15 through August 31 for migratory passerine birds. To avoid impacts to nesting birds (common and special status) during the nesting season (February 1 through September 15), a qualified Avian Biologist will conduct pre-construction Nesting Bird Surveys (NBS) at least five days prior to project-related disturbance to nestable vegetation to identify any active nests. If no active nests are found, no further action will be required. If an active nest is found, the biologist will set appropriate no-work buffers around the nest which will be based upon the nesting species, its sensitivity to disturbance, nesting stage and expected types, intensity and duration of disturbance. The nests and buffer zones shall be field checked weekly by a qualified biological monitor. The approved no-work buffer zone shall be clearly marked in the field, within which no disturbance activity shall commence until the qualified biologist has determined the young birds have successfully fledged and the nest is inactive.

### **CULTURAL RESOURCES**

- CUL-1** In the event that pre-contact cultural resources are discovered during project activities, all work in the immediate vicinity of the find (within a 60-foot buffer) shall cease and a qualified archaeologist meeting Secretary of Interior standards shall be hired to assess the find. Work on the other portions of the project outside of the buffered area may continue during this assessment period. Additionally, the San Manuel Band of Mission Indians Cultural Resources Department (SMBMI) shall be contacted, as detailed within Mitigation Measure TCR-1, if any such find occurs and be provided information after the archaeologist makes his/her initial assessment of the nature of the find, so as to provide Tribal input with regards to significance and treatment.
- CUL-2** If significant cultural resources, as defined by CEQA (as amended, 2015), are discovered and avoidance cannot be ensured, the archaeologist shall develop a Monitoring and Treatment Plan, the drafts of which shall be provided to SMBMI for review and comment, as detailed within TCR-1. The archaeologist shall monitor the remainder of the project and implement the Plan accordingly.
- CUL-3** If human remains or funerary objects are encountered during any activities associated with the project, work in the immediate vicinity (within a 100-foot buffer of the find) shall cease and the County Coroner shall be contacted pursuant to State Health and Safety Code §7050.5 and Public Resources Code Section 5097.98, and enforced for the duration of the project. These code provisions require notification of the County Coroner and the Native American Heritage Commission, who in turn must notify those persons believed to be most likely descended from the deceased Native American for appropriate disposition of the remains. Excavation or disturbance may continue in other areas of the project site that are not reasonably suspected to overlie adjacent remains or archaeological resources.

## **GEOLOGY AND SOILS**

**GEO-1** The contractor will provide to the District an Erosion Control Plan (ECP) that will identify the Best Management Practices (BMPs) for managing any stockpiled materials on site and excavation. The BMPs may include but not be limited to the following:

- Prevent mud and debris from entering roadways, including the main entry road by providing trackout measures.
- Locate stockpiles away from drainage courses, drain inlets or concentrated flows of storm water.
- For wind erosion control, apply water or other dust palliative to stockpiles. Smaller stockpiles may be covered as an alternative.
- Place bagged materials on pallets under cover.
- During the rainy season, non-active soil stockpiles will be covered with heavy plastic and the stockpile contained within a temporary perimeter sediment barrier, such as berms, dikes, silt fences, or sandbag barriers. A soil stabilization measure may be used in lieu of cover.
- During the non-rainy season prior to the onset of rain, the stockpile should either be covered or protect them with temporary perimeter sediment barriers.
- Year-round, active soil stockpiles will be protected with temporary linear sediment barriers prior to the onset of rain.
- The main haul road will be graded and watered at least once per day, or as often as necessary to control dust as required by the South Coast Air Quality Management District (SCAQMD).

**GEO-2** Prior to construction, conduct at least one exploratory boring at the site of the proposed building and clarifier to determine the potential for groundwater and encountering hard, fresh bedrock to determine the level of construction equipment necessary.

**GEO-3** Earthwork at the site should include remedial grading to remove fill and loose native materials to competent bedrock in the area of the new retaining wall for the access road realignment.

**GEO-3 Paleontological Resources.** Any substantial excavations (i.e. over 5 feet in depth) in the proposed Project area should be monitored closely to quickly and professionally recover any fossil remains discovered while not impeding development. Also, sediment samples should be collected and processed to determine the small fossil potential in the proposed Project area. Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.

## **HAZARDS AND HAZARDOUS MATERIALS**

**HAZ – 1** All asphalt requiring removal from the Project Site shall be disposed of in accordance with current regulatory standards

**HAZ – 2** A hazardous spill prevention plan shall be prepared by the CSD or its contractor prior to construction. The plan shall state the actions that would be required if a spill occurs to prevent contamination of surface waters and provide for cleanup of the spill. The plan shall follow Federal, state, and local safety guidelines and standards to avoid increased exposure to these pollutants.

- HAZ – 3** If a contaminated area is encountered during construction, construction shall cease in the vicinity of the contaminated area. The construction contractor shall notify all appropriate authorities, including the EPA and the County, if appropriate. If necessary, the contaminated site shall be remediated to minimize the potential for exposure of the public and to allow the Project to be safely constructed.
- HAZ-4** During construction, all staging areas, welding areas, or areas slated for construction using spark-producing equipment will be cleared of dried vegetation or other material that could ignite. Spark arresting equipment shall be in good working order. The District shall require all vehicles and crews working at the project site to have access to functional fire extinguishers at all times. In addition, construction crews are required to have a spotter during welding activities to look out for potentially dangerous situations, including accidental sparks. The contractor also shall provide a safety plan for the implementation of additional protocols when the National Weather Service issues a Red Flag Warning. Such protocols should address smoking and fire rules, storage and parking areas, use of gasoline-powered tools, use of spark arresters on construction equipment, road closures, use of a fire guard, fire suppression tools, fire suppression equipment, and training requirements.

### **TRIBAL CULTURAL RESOURCES**

- TCR-1** The San Manuel Band of Mission Indians Cultural Resources Department (SMBMI) shall be contacted, as detailed in CR-1, of any pre-contact cultural resources discovered during project implementation, and be provided information regarding the nature of the find, so as to provide Tribal input with regards to significance and treatment. Should the find be deemed significant, as defined by CEQA (as amended, 2015), a cultural resources Monitoring and Treatment Plan shall be created by the archaeologist, in coordination with SMBMI, and all subsequent finds shall be subject to this Plan. This Plan shall allow for a monitor to be present that represents SMBMI for the remainder of the project, should SMBMI elect to place a monitor on-site.
- TCR-2** Any and all archaeological/cultural documents created as a part of the project (isolate records, site records, survey reports, testing reports, etc.) shall be supplied to the applicant and Lead Agency for dissemination to SMBMI. The Lead Agency and/or applicant shall, in good faith, consult with SMBMI throughout the life of the project.

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United States Geological Survey (USGS)

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# APPENDICES

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## **Appendix A**

### **Air Quality Analysis**

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# **Crestline Sanitation District Huston Creek (WWTP) Dewatering Building and Primary Clarifier Project**

## **AIR QUALITY IMPACT ANALYSIS**

### **COUNTY OF SAN BERNARDINO**

PREPARED BY:

Haseeb Qureshi  
hqureshi@urbanxroads.com  
(949) 336-5987

Alyssa Tamase  
atamase@urbanxroads.com  
(949) 336-5988

SEPTEMBER 19, 2019



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## **LIST OF ABBREVIATED TERMS**

(1)	Reference
µg/m <sup>3</sup>	Microgram per Cubic Meter
AQ	Air Quality
AQIA	Air Quality Impact Analysis
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
CAA	Federal Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CALGreen	California Green Building Standards Code
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCR	California Code of Regulations
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CO	Carbon Monoxide
COUNTY	County of San Bernardino
CY	Cubic Yards
EIR	Environmental Impact Reports
EPA	Environmental Protection Agency
GHG	Greenhouse Gas
HHDT	Heavy-Heavy-Duty Trucks
LBS/DAY	Pounds Per Day
LST	Localized Significance Threshold
LST METHODOLOGY	Final Localized Significance Threshold Methodology
MHDT	Medium-Heavy-Duty Trucks
NAAQS	National Ambient Air Quality Standards
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Nitrogen Oxides
NOP	Notice of Preparation
O <sub>3</sub>	Ozone
Pb	Lead
PM <sub>10</sub>	Particulate Matter 10 microns in diameter or less
PM <sub>2.5</sub>	Particulate Matter 2.5 microns in diameter or less
PPM	Parts Per Million
Project	Crestline Sanitation District Huston Creek (WWTP)

Dewatering Building and Primary Clarifier Project

ROG	Reactive Organic Gases
RTP/SCS	Regional Transportation Plan/ Sustainable Communities Strategy
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SF	Square Feet
SIP	State Implementation Plans
SO <sub>2</sub>	Sulfur Dioxide
SRA	Source Receptor Area
TAC	Toxic Air Contaminant
VOC	Volatile Organic Compounds
VPH	Vehicles Per Hour
WWTP	Wastewater Treatment Plant

## EXECUTIVE SUMMARY

### ES.1 SUMMARY OF FINDINGS

The results of this Crestline Sanitation District Huston Creek (WWTP) Dewatering Building and Primary Clarifier Project Air Quality Impact Analysis are summarized below based on the significance criteria in Section 3 of this report consistent with Appendix G of the California Environmental Quality Act (CEQA) Guidelines (1). Table ES-1 shows the findings of significance for each potential air quality impact under CEQA before and after any required mitigation measures described below.

**TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS**

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Regional Construction Emissions	3.4	<i>Less Than Significant</i>	<i>n/a</i>
Localized Construction Emissions	3.6	<i>Less Than Significant</i>	<i>n/a</i>
Regional Operational Emissions	3.5	<i>Less Than Significant</i>	<i>n/a</i>
Localized Operational Emissions	3.7	<i>Less Than Significant</i>	<i>n/a</i>
CO "Hot Spot" Analysis	3.8	<i>Less Than Significant</i>	<i>n/a</i>
Air Quality Management Plan	3.9	<i>Less Than Significant</i>	<i>n/a</i>
Sensitive Receptors	3.10	<i>Less Than Significant</i>	<i>n/a</i>
Odors	3.11	<i>Less Than Significant</i>	<i>n/a</i>
Cumulative Impacts	3.12	<i>Less Than Significant</i>	<i>n/a</i>

### ES.2 STANDARD REGULATORY REQUIREMENTS/BEST AVAILABLE CONTROL MEASURES

Measures listed below (or equivalent language) shall appear on all Project grading plans, construction specifications and bid documents, and the County shall ensure such language is incorporated prior to issuance of any development permits. An South Coast Air Quality Management District (SCAQMD) Rule that are currently applicable during construction activity for this Project include but is not limited to Rule 403 (Fugitive Dust) (2). It should be noted that

this Best Available Control Measures (BACMs) is not mitigation as it is standard regulatory requirements. As such, credit for Rule 403 has been taken.

#### **BACM AQ-1**

The contractor shall adhere to applicable measures contained in Table 1 of Rule 403 including, but not limited to (2):

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.
- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Project are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.
- The contractor shall ensure that traffic speeds on unpaved roads and Project site areas are limited to 15 miles per hour or less.

### **ES.3 MITIGATION MEASURES**

The Project would not result in an exceedance of any regional or localized construction-source emissions thresholds. As such, the Project would not result in any significant impacts and no mitigation measures are required.

# **1 INTRODUCTION**

This report presents the results of the air quality impact analysis (AQIA) prepared by Urban Crossroads, Inc., for the proposed Crestline Sanitation District Huston Creek (WWTP) Dewatering Building and Primary Clarifier Project (Project). The purpose of this AQIA is to evaluate the potential impacts to air quality associated with construction and operation of the proposed Project and recommend measures to mitigate impacts considered potentially significant in comparison to thresholds established by the SCAQMD.

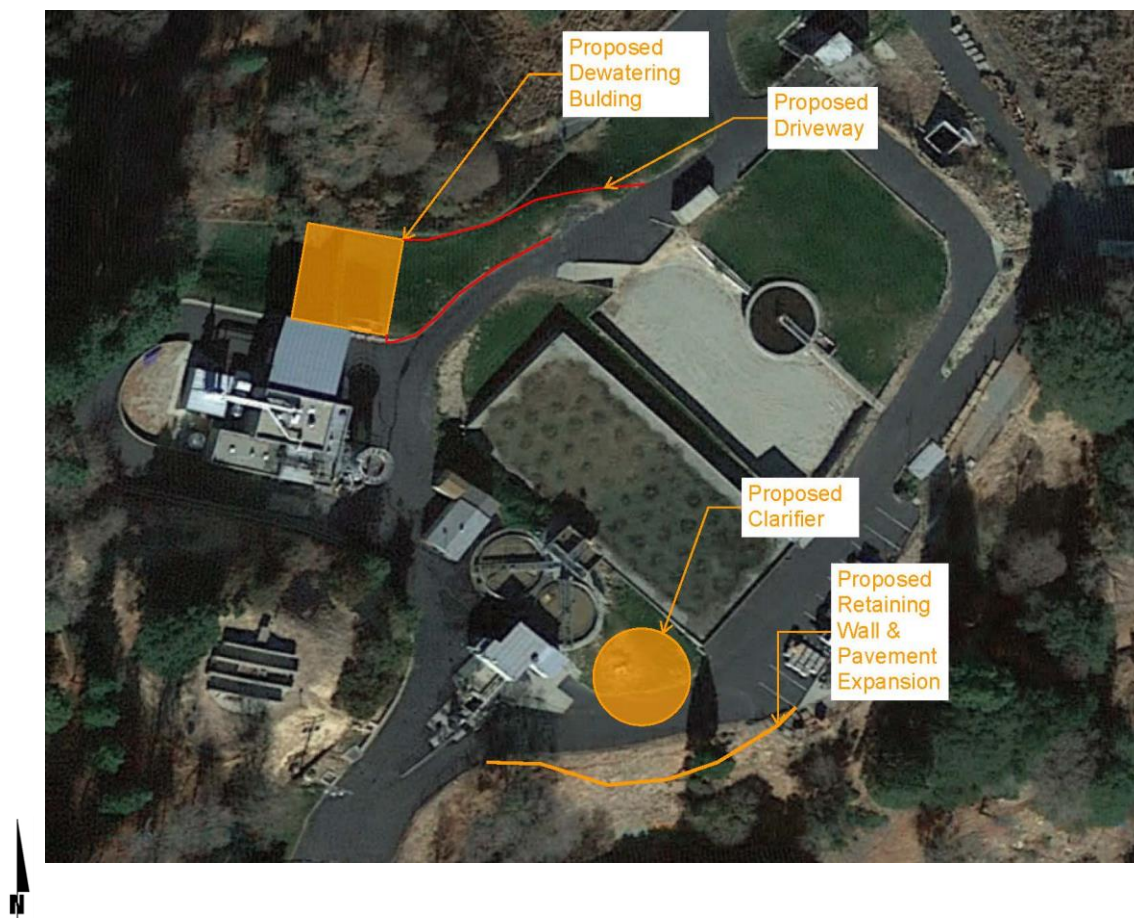
## **1.1 SITE LOCATION**

The proposed Crestline Sanitation District Huston Creek (WWTP) Dewatering Building and Primary Clarifier Project Project is located within the census-designated community of Crestline, in the County of San Bernardino.

## **1.2 PROJECT DESCRIPTION**

The Project proposes to upgrade the existing wastewater treatment plant with the addition of a primary clarifier, backup generator, trickling filter recirculation pumps, and a sludge dewatering building, as shown on Exhibit 1-A. The Project is anticipated to be constructed in a single phase by the year 2022.

### **EXHIBIT 1-A: PROJECT CONCEPT SKETCH**



## **2 AIR QUALITY SETTING**

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

### **2.1 SOUTH COAST AIR BASIN**

The Project site is located in the SCAB within the jurisdiction of SCAQMD (3). The SCAQMD was created by the 1977 Lewis-Presley Air Quality Management Act, which merged four county air pollution control bodies into one regional district. Under the Act, the SCAQMD is responsible for bringing air quality in areas under its jurisdiction into conformity with federal and state air quality standards. As previously stated, the Project site is located within the SCAB, a 6,745-square mile subregion of the SCAQMD, which includes portions of Los Angeles, Riverside, and San Bernardino Counties, and all of Orange County.

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

### **2.2 REGIONAL CLIMATE**

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

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

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

More than 90 percent of the SCAB's rainfall occurs from November through April. The annual average rainfall varies from approximately nine inches in Riverside to fourteen inches in

downtown Los Angeles. Monthly and yearly rainfall totals are extremely variable. Summer rainfall usually consists of widely scattered thunderstorms near the coast and slightly heavier shower activity in the eastern portion of the SCAB with frequency being higher near the coast.

Due to its generally clear weather, about three-quarters of available sunshine is received in the SCAB. The remaining one-quarter is absorbed by clouds. The ultraviolet portion of this abundant radiation is a key factor in photochemical reactions. On the shortest day of the year there are approximately 10 hours of possible sunshine, and on the longest day of the year there are approximately 14½ hours of possible sunshine.

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

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

A second inversion-type forms in conjunction with the drainage of cool air off the surrounding mountains at night followed by the seaward drift of this pool of cool air. The top of this layer forms a sharp boundary with the warmer air aloft and creates nocturnal radiation inversions. These inversions occur primarily in the winter, when nights are longer and onshore flow is weakest. They are typically only a few hundred feet above mean sea level. These inversions effectively trap pollutants, such as NO<sub>x</sub> and CO from vehicles, as the pool of cool air drifts seaward. Winter is therefore a period of high levels of primary pollutants along the coastline.

## **2.3 WIND PATTERNS AND PROJECT LOCATION**

The distinctive climate of the Project area and the SCAB is determined by its terrain and geographical location. The SCAB is located in a coastal plain with connecting broad valleys and



low hills, bounded by the Pacific Ocean in the southwest quadrant with high mountains forming the remainder of the perimeter.

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

## 2.4 CRITERIA POLLUTANTS

Criteria pollutants are pollutants that are regulated through the development of human health based and/or environmentally based criteria for setting permissible levels. Criteria pollutants, their typical sources, and health effects are identified below (4):

**TABLE 2-1: CRITERIA POLLUTANTS**

Criteria Pollutant	Description	Sources	Health Effects
CO	CO is a colorless, odorless gas produced by the incomplete combustion of carbon-containing fuels, such as gasoline or wood. CO concentrations tend to be the highest during the winter morning, when little to no wind and surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines, unlike ozone, motor vehicles operating at slow speeds are the primary source of CO in the SCAB. The highest ambient CO concentrations are generally found near congested transportation corridors and intersections.	Any source that burns fuel such as automobiles, trucks, heavy construction equipment, farming equipment and residential heating.	Individuals with a deficient blood supply to the heart are the most susceptible to the adverse effects of CO exposure. The effects observed include earlier onset of chest pain with exercise, and electrocardiograph changes indicative of decreased oxygen supply to the heart. Inhaled CO has no direct toxic effect on the lungs but exerts its effect on tissues by interfering with oxygen transport and competing with oxygen to combine with hemoglobin present in the blood to form carboxyhemoglobin (COHb). Hence, conditions with an increased demand for oxygen supply can be adversely affected by exposure to CO. Individuals most at risk include fetuses, patients with diseases involving heart and blood vessels, and patients with chronic hypoxemia (oxygen deficiency) as seen at high altitudes.

Criteria Pollutant	Description	Sources	Health Effects
Sulfur Dioxide (SO <sub>2</sub> )	SO <sub>2</sub> is a colorless, extremely irritating gas or liquid. It enters the atmosphere as a pollutant mainly as a result of burning high sulfur-content fuel oils and coal and from chemical processes occurring at chemical plants and refineries. When SO <sub>2</sub> oxidizes in the atmosphere, it forms sulfates (SO <sub>4</sub> ). Collectively, these pollutants are referred to as sulfur oxides (SO <sub>x</sub> )	Coal or oil burning power plants and industries, refineries, diesel engines	<p>A few minutes of exposure to low levels of SO<sub>2</sub> can result in airway constriction in some asthmatics, all of whom are sensitive to its effects. In asthmatics, increase in resistance to air flow, as well as reduction in breathing capacity leading to severe breathing difficulties, are observed after acute exposure to SO<sub>2</sub>. In contrast, healthy individuals do not exhibit similar acute responses even after exposure to higher concentrations of SO<sub>2</sub>.</p> <p>Animal studies suggest that despite SO<sub>2</sub> being a respiratory irritant, it does not cause substantial lung injury at ambient concentrations. However, very high levels of exposure can cause lung edema (fluid accumulation), lung tissue damage, and sloughing off of cells lining the respiratory tract.</p> <p>Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient SO<sub>2</sub> levels. In these studies, efforts to separate the effects of SO<sub>2</sub> from those of fine particles have not been successful. It is not clear whether the two pollutants act synergistically, or one pollutant alone is the predominant factor.</p>

Criteria Pollutant	Description	Sources	Health Effects
NO <sub>x</sub>	NO <sub>x</sub> consist of nitric oxide (NO), nitrogen dioxide (NO <sub>2</sub> ) and nitrous oxide (N <sub>2</sub> O) and are formed when nitrogen (N <sub>2</sub> ) combines with oxygen (O <sub>2</sub> ). Their lifespan in the atmosphere ranges from one to seven days for nitric oxide and nitrogen dioxide, to 170 years for nitrous oxide. Nitrogen oxides are typically created during combustion processes and are major contributors to smog formation and acid deposition. NO <sub>2</sub> is a criteria air pollutant and may result in numerous adverse health effects; it absorbs blue light, resulting in a brownish-red cast to the atmosphere and reduced visibility. Of the seven types of nitrogen oxide compounds, NO <sub>2</sub> is the most abundant in the atmosphere. As ambient concentrations of NO <sub>2</sub> are related to traffic density, commuters in heavy traffic may be exposed to higher concentrations of NO <sub>2</sub> than those indicated by regional monitoring station.	Any source that burns fuel such as automobiles, trucks, heavy construction equipment, farming equipment and residential heating.	<p>Population-based studies suggest that an increase in acute respiratory illness, including infections and respiratory symptoms in children (not infants), is associated with long-term exposure to NO<sub>2</sub> at levels found in homes with gas stoves, which are higher than ambient levels found in Southern California. Increase in resistance to air flow and airway contraction is observed after short-term exposure to NO<sub>2</sub> in healthy subjects. Larger decreases in lung functions are observed in individuals with asthma or chronic obstructive pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these sub-groups.</p> <p>In animals, exposure to levels of NO<sub>2</sub> considerably higher than ambient concentrations result in increased susceptibility to infections, possibly due to the observed changes in cells involved in maintaining immune functions. The severity of lung tissue damage associated with high levels of ozone exposure increases when animals are exposed to a combination of ozone and NO<sub>2</sub>.</p>
Ozone (O <sub>3</sub> )	O <sub>3</sub> is a highly reactive and unstable gas that is formed when VOCs and NO <sub>x</sub> , both byproducts of internal combustion engine exhaust, undergo slow photochemical reactions in the presence of sunlight. Ozone concentrations are generally	Formed when reactive organic gases (ROG) and nitrogen oxides react in the presence of sunlight. ROG sources	Individuals exercising outdoors, children, and people with preexisting lung disease, such as asthma and chronic pulmonary lung disease, are considered to be the most susceptible sub-groups for ozone effects.

Criteria Pollutant	Description	Sources	Health Effects
	highest during the summer months when direct sunlight, light wind, and warm temperature conditions are favorable to the formation of this pollutant.	include any source that burns fuels, (e.g., gasoline, natural gas, wood, oil) solvents, petroleum processing and storage and pesticides.	<p>Short-term exposure (lasting for a few hours) to ozone at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes. Elevated ozone levels are associated with increased school absences. In recent years, a correlation between elevated ambient ozone levels and increases in daily hospital admission rates, as well as mortality, has also been reported. An increased risk for asthma has been found in children who participate in multiple outdoor sports and live in communities with high ozone levels.</p> <p>Ozone exposure under exercising conditions is known to increase the severity of the responses described above. Animal studies suggest that exposure to a combination of pollutants that includes ozone may be more toxic than exposure to ozone alone. Although lung volume and resistance changes observed after a single exposure diminish with repeated exposures, biochemical and cellular changes appear to persist, which can lead to subsequent lung structural changes.</p>
Particulate Matter	PM <sub>10</sub> (Particulate Matter less than 10 microns): A major air pollutant consisting of tiny solid or liquid particles of soot, dust,	Sources of PM <sub>10</sub> include road dust, windblown dust and construction. Also	A consistent correlation between elevated ambient fine particulate matter (PM <sub>10</sub> and PM <sub>2.5</sub> ) levels and an

Criteria Pollutant	Description	Sources	Health Effects
	<p>smoke, fumes, and aerosols. Particulate matter pollution is a major cause of reduce visibility (haze) which is caused by the scattering of light and consequently the significant reduction air clarity. The size of the particles (10 microns or smaller, about 0.0004 inches or less) allows them to easily enter the lungs where they may be deposited, resulting in adverse health effects. Additionally, it should be noted that PM<sub>10</sub> is considered a criteria air pollutant.</p> <p>PM<sub>2.5</sub> (Particulate Matter less than 2.5 microns): A similar air pollutant to PM<sub>10</sub> consisting of tiny solid or liquid particles which are 2.5 microns or smaller (which is often referred to as fine particles). These particles are formed in the atmosphere from primary gaseous emissions that include sulfates formed from SO<sub>2</sub> release from power plants and industrial facilities and nitrates that are formed from NO<sub>x</sub> release from power plants, automobiles and other types of combustion sources. The chemical composition of fine particles highly depends on location, time of year, and weather conditions. PM<sub>2.5</sub> is a criteria air pollutant.</p>	<p>formed from other pollutants (acid rain, NO<sub>x</sub>, SO<sub>x</sub>, organics). Incomplete combustion of any fuel.</p> <p>PM<sub>2.5</sub> comes from fuel combustion in motor vehicles, equipment and industrial sources, residential and agricultural burning. Also formed from reaction of other pollutants (acid rain, NO<sub>x</sub>, SO<sub>x</sub>, organics).</p>	<p>increase in mortality rates, respiratory infections, number and severity of asthma attacks and the number of hospital admissions has been observed in different parts of the United States and various areas around the world. In recent years, some studies have reported an association between long-term exposure to air pollution dominated by fine particles and increased mortality, reduction in lifespan, and an increased mortality from lung cancer.</p> <p>Daily fluctuations in PM<sub>2.5</sub> concentration levels have also been related to hospital admissions for acute respiratory conditions in children, to school and kindergarten absences, to a decrease in respiratory lung volumes in normal children, and to increased medication use in children and adults with asthma. Recent studies show lung function growth in children is reduced with long term exposure to particulate matter.</p> <p>The elderly, people with pre-existing respiratory or cardiovascular disease, and children appear to be more susceptible to the effects of high levels of PM<sub>10</sub> and PM<sub>2.5</sub>.</p>
Volatile Organic Compounds (VOC)	<p>VOCs are hydrocarbon compounds (any compound containing various combinations of hydrogen and carbon atoms) that exist in the ambient air. VOCs contribute to the formation of smog through atmospheric photochemical reactions and/or may be toxic. Compounds of carbon (also known as organic</p>	<p>Organic chemicals are widely used as ingredients in household products. Paints, varnishes and wax all contain organic solvents, as do many cleaning, disinfecting,</p>	<p>Breathing VOCs can irritate the eyes, nose and throat, can cause difficulty breathing and nausea, and can damage the central nervous system as well as other organs. Some VOCs can cause cancer. Not all VOCs have all these health</p>

Criteria Pollutant	Description	Sources	Health Effects
	compounds) have different levels of reactivity; that is, they do not react at the same speed or do not form ozone to the same extent when exposed to photochemical processes. VOCs often have an odor, and some examples include gasoline, alcohol, and the solvents used in paints. Exceptions to the VOC designation include carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate. VOCs are a criteria pollutant since they are a precursor to O <sub>3</sub> , which is a criteria pollutant. The terms VOC and ROG (see below) interchangeably.	cosmetic, degreasing and hobby products. Fuels are made up of organic chemicals. All of these products can release organic compounds while you are using them, and, to some degree, when they are stored.	effects, though many have several.
Reactive Organic Gas (ROG)	Similar to VOC, ROG are also precursors in forming ozone and consist of compounds containing methane, ethane, propane, butane, and longer chain hydrocarbons, which are typically the result of some type of combustion/decomposition process. Smog is formed when ROG and nitrogen oxides react in the presence of sunlight. ROG are a criteria pollutant since they are a precursor to O <sub>3</sub> , which is a criteria pollutant. The terms ROG and VOC (see previous) interchangeably.	Sources similar to VOCs.	Health effects similar to VOCs.
Lead (Pb)	Lead is a heavy metal that is highly persistent in the environment and is considered a criteria pollutant. In the past, the primary source of lead in the air was emissions from vehicles burning leaded gasoline. The major sources of lead emissions are ore and metals processing, particularly lead smelters, and piston-engine aircraft operating on leaded aviation gasoline. Other stationary sources include	Metal smelters, resource recovery, leaded gasoline, deterioration of lead paint.	Fetuses, infants, and children are more sensitive than others to the adverse effects of Pb exposure. Exposure to low levels of Pb can adversely affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotient. In adults, increased Pb levels are

Criteria Pollutant	Description	Sources	Health Effects
	waste incinerators, utilities, and lead-acid battery manufacturers. It should be noted that the Project does not include operational activities such as metal processing or lead acid battery manufacturing. As such, the Project is not anticipated to generate a quantifiable amount of lead emissions.		<p>associated with increased blood pressure.</p> <p>Pb poisoning can cause anemia, lethargy, seizures, and death; although it appears that there are no direct effects of Pb on the respiratory system. Pb can be stored in the bone from early age environmental exposure, and elevated blood Pb levels can occur due to breakdown of bone tissue during pregnancy, hyperthyroidism (increased secretion of hormones from the thyroid gland) and osteoporosis (breakdown of bony tissue). Fetuses and breast-fed babies can be exposed to higher levels of Pb because of previous environmental Pb exposure of their mothers.</p>
Odor	Odor means the perception experienced by a person when one or more chemical substances in the air come into contact with the human olfactory nerves.	Odors can come from many sources including animals, human activities, industry, natures, and vehicles.	Offensive odors can potentially affect human health in several ways. First, odorant compounds can irritate the eye, nose, and throat, which can reduce respiratory volume. Second, studies have shown that the VOCs that cause odors can stimulate sensory nerves to cause neurochemical changes that might influence health, for instance, by compromising the immune system. Finally, unpleasant odors can trigger memories or attitudes linked to unpleasant odors, causing cognitive and emotional effects such as stress.

## **2.5 EXISTING AIR QUALITY**

Existing air quality is measured at established SCAQMD air quality monitoring stations. Monitored air quality is evaluated in the context of ambient air quality standards. These standards are the levels of air quality that are considered safe, with an adequate margin of safety, to protect the public health and welfare. National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) currently in effect are shown in Table 2-2 (5).

The determination of whether a region's air quality is healthful or unhealthful is determined by comparing contaminant levels in ambient air samples to the state and federal standards. At the time of this AQIA, the most recent state and federal standards were updated by CARB on May ,4 2016 and are presented in Table 2-2. The air quality in a region is considered to be in attainment by the state if the measured ambient air pollutant levels for O<sub>3</sub>, CO (except 8-hour Lake Tahoe), SO<sub>2</sub> (1 and 24 hour), NO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> are not to be exceeded. All others are not to be equaled or exceeded. It should be noted that the three-year period is presented for informational purposes and is not the basis for how the State assigns attainment status. Attainment status for a pollutant means that the Air District meets the standards set by the EPA or the California EPA. Conversely, nonattainment means that an area has monitored air quality that does not meet the NAAQS or CAAQS standards. In order to improve air quality in nonattainment areas, a State Implementation Plan (SIP) is drafted. The SIP outlines the measures that the state will take to improve air quality. Once nonattainment areas meet the standards and additional redesignation requirements, the EPA will designate the area as a maintenance area (6).



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

Ambient Air Quality Standards						
Pollutant	Averaging Time	California Standards <sup>1</sup>		National Standards <sup>2</sup>		
		Concentration <sup>3</sup>	Method <sup>4</sup>	Primary <sup>3,5</sup>	Secondary <sup>3,6</sup>	Method <sup>7</sup>
Ozone (O <sub>3</sub> ) <sup>8</sup>	1 Hour	0.09 ppm (180 µg/m <sup>3</sup> )	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m <sup>3</sup> )		0.070 ppm (137 µg/m <sup>3</sup> )		
Respirable Particulate Matter (PM10) <sup>9</sup>	24 Hour	50 µg/m <sup>3</sup>	Gravimetric or Beta Attenuation	150 µg/m <sup>3</sup>	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m <sup>3</sup>		—		
Fine Particulate Matter (PM2.5) <sup>9</sup>	24 Hour	—	—	35 µg/m <sup>3</sup>	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m <sup>3</sup>	Gravimetric or Beta Attenuation	12.0 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m <sup>3</sup> )	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m <sup>3</sup> )	—	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m <sup>3</sup> )		9 ppm (10 mg/m <sup>3</sup> )	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m <sup>3</sup> )		—	—	
Nitrogen Dioxide (NO <sub>2</sub> ) <sup>10</sup>	1 Hour	0.18 ppm (339 µg/m <sup>3</sup> )	Gas Phase Chemiluminescence	100 ppb (188 µg/m <sup>3</sup> )	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m <sup>3</sup> )		0.053 ppm (100 µg/m <sup>3</sup> )	Same as Primary Standard	
Sulfur Dioxide (SO <sub>2</sub> ) <sup>11</sup>	1 Hour	0.25 ppm (655 µg/m <sup>3</sup> )	Ultraviolet Fluorescence	75 ppb (196 µg/m <sup>3</sup> )	—	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m <sup>3</sup> )	
	24 Hour	0.04 ppm (105 µg/m <sup>3</sup> )		0.14 ppm (for certain areas) <sup>11</sup>	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas) <sup>11</sup>	—	
Lead <sup>12,13</sup>	30 Day Average	1.5 µg/m <sup>3</sup>	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m <sup>3</sup> (for certain areas) <sup>12</sup>	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m <sup>3</sup>		
Visibility Reducing Particles <sup>14</sup>	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24 Hour	25 µg/m <sup>3</sup>	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m <sup>3</sup> )	Ultraviolet Fluorescence			
Vinyl Chloride <sup>12</sup>	24 Hour	0.01 ppm (26 µg/m <sup>3</sup> )	Gas Chromatography			

See footnotes on next page ...

See footnotes on next page ...

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**TABLE 2-2: AMBIENT AIR QUALITY STANDARDS (2 OF 2)**

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above  $150 \mu\text{g}/\text{m}^3$  is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of  $25^\circ\text{C}$  and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of  $25^\circ\text{C}$  and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.
8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.
9. On December 14, 2012, the national annual PM2.5 primary standard was lowered from  $15 \mu\text{g}/\text{m}^3$  to  $12.0 \mu\text{g}/\text{m}^3$ . The existing national 24-hour PM2.5 standards (primary and secondary) were retained at  $35 \mu\text{g}/\text{m}^3$ , as was the annual secondary standard of  $15 \mu\text{g}/\text{m}^3$ . The existing 24-hour PM10 standards (primary and secondary) of  $150 \mu\text{g}/\text{m}^3$  also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
10. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
11. On June 2, 2010, a new 1-hour  $\text{SO}_2$  standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971  $\text{SO}_2$  national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.  
Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
12. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
13. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard ( $1.5 \mu\text{g}/\text{m}^3$  as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
14. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

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## 2.6 REGIONAL AIR QUALITY

Air pollution contributes to a wide variety of adverse health effects. The EPA has established national ambient air quality standards (NAAQS) for six of the most common air pollutants: carbon monoxide, lead, ozone, particulate matter, nitrogen dioxide, and sulfur dioxide which are known as criteria pollutants. The SCAQMD monitors levels of various criteria pollutants at 37 permanent monitoring stations and 5 single-pollutant source Lead (Pb) air monitoring sites throughout the air district (7). On February 21, 2019, ARB posted the 2018 amendments to the state and national area designations. See Table 2-3 for attainment designations for the SCAB (8). Appendix 2.1 provides geographic representation of the state and federal attainment status for applicable criteria pollutants within the SCAB.

**TABLE 2-3: ATTAINMENT STATUS OF CRITERIA POLLUTANTS IN THE SCAB**

Criteria Pollutant	State Designation	Federal Designation
O <sub>3</sub> – 1-hour standard	Nonattainment	--
O <sub>3</sub> – 8-hour standard	Nonattainment	Nonattainment
PM <sub>10</sub>	Nonattainment	Attainment
PM <sub>2.5</sub>	Nonattainment	Nonattainment
CO	Attainment	Unclassifiable/Attainment
NO <sub>2</sub>	Attainment	Unclassifiable/Attainment
SO <sub>2</sub>	Unclassifiable/Attainment	Unclassifiable/Attainment
Pb <sup>1</sup>	Attainment	Unclassifiable/Attainment

Note: See Appendix 2.1 for a detailed map of State/National Area Designations within the SCAB

-- = The national 1-hour O<sub>3</sub> standard was revoked effective June 15, 2005.

## 2.7 LOCAL AIR QUALITY

The Project site is located within the Source Receptor Area (SRA) 37. Within SRA 37, the SCAQMD Central San Bernardino Mountain monitoring station is located 0.87 miles south of the Project site and is the nearest long-term air quality monitoring site for O<sub>3</sub> and PM<sub>10</sub>. Relative to the Project site, the SCAQMD Central San Bernardino Valley 1 monitoring station (located in SRA 34) is the nearest monitoring station, located approximately 9.79 miles south of the Project site, that monitors CO, NO<sub>2</sub>, and PM<sub>2.5</sub>. It should be noted that the Central San Bernardino Valley 1 monitoring station was utilized in lieu of the Central San Bernardino Mountain monitoring station only in instances where data was not available from the Central San Bernardino Mountain site.

The most recent three (3) years of data available is shown on Table 2-4 and identifies the number of days ambient air quality standards were exceeded for the study area, which is considered to be representative of the local air quality at the Project site. Data for O<sub>3</sub>, CO, NO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> for 2016 through 2018 was obtained from the SCAQMD Air Quality Data Tables (9). Additionally,

<sup>1</sup> The Federal nonattainment designation for lead is only applicable towards the Los Angeles County portion of the SCAB.

data for SO<sub>2</sub> has been omitted as attainment is regularly met in the SCAB and few monitoring stations measure SO<sub>2</sub> concentrations.

**TABLE 2-4: PROJECT AREA AIR QUALITY MONITORING SUMMARY 2016-2018**

POLLUTANT	STANDARD	YEAR		
		2016	2017	2018
O <sub>3</sub>				
Maximum Federal 1-Hour Concentration (ppm)		0.163	0.146	0.142
Maximum Federal 8-Hour Concentration (ppm)		0.121	0.121	0.125
Number of Days Exceeding Federal 1-Hour Standard	>0.07 ppm	9	11	3
Number of Days Exceeding State 1-Hour Standard	> 0.09 ppm	64	76	57
Number of Days Exceeding Federal 8-Hour Standard	> 0.070 ppm	101	110	113
Number of Days Exceeding State 8-Hour Standard	> 0.070 ppm	103	110	113
CO				
Maximum Federal 1-Hour Concentration	> 35 ppm	1.7	1.6	1.9
Maximum Federal 8-Hour Concentration	> 20 ppm	1.0	1.3	1.1
NO <sub>2</sub>				
Maximum Federal 1-Hour Concentration	> 0.100 ppm	0.07	0.07	0.06
Annual Federal Standard Design Value		0.02	0.02	0.02
PM <sub>10</sub>				
Maximum Federal 24-Hour Concentration (µg/m <sup>3</sup> )	> 150 µg/m <sup>3</sup>	46	56	78
Annual Federal Arithmetic Mean (µg/m <sup>3</sup> )		17.1	17.6	19.5
Number of Days Exceeding Federal 24-Hour Standard	> 150 µg/m <sup>3</sup>	0	0	0
Number of Days Exceeding State 24-Hour Standard	> 50 µg/m <sup>3</sup>	0	2	1
PM <sub>2.5</sub>				
Maximum Federal 24-Hour Concentration (µg/m <sup>3</sup> )	> 35 µg/m <sup>3</sup>	30.45	39.20	29.20
Annual Federal Arithmetic Mean (µg/m <sup>3</sup> )	> 12 µg/m <sup>3</sup>	12.04	12.04	11.13
Number of Days Exceeding Federal 24-Hour Standard	> 35 µg/m <sup>3</sup>	0	1	0

Source: Data for O<sub>3</sub>, CO, NO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> was obtained from SCAQMD Air Quality Data Tables.

## 2.8 REGULATORY BACKGROUND

### 2.8.1 FEDERAL REGULATIONS

The EPA is responsible for setting and enforcing the NAAQS for O<sub>3</sub>, CO, NO<sub>x</sub>, SO<sub>2</sub>, PM<sub>10</sub>, and Pb (10). The EPA has jurisdiction over emissions sources that are under the authority of the federal government including aircraft, locomotives, and emissions sources outside state waters (Outer Continental Shelf). The EPA also establishes emission standards for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission requirements of the CARB.

The Federal Clean Air Act (CAA) was first enacted in 1955 and has been amended numerous times in subsequent years (1963, 1965, 1967, 1970, 1977, and 1990). The CAA establishes the federal air quality standards, the NAAQS, and specifies future dates for achieving compliance (11). The CAA also mandates that states submit and implement SIPs for local areas not meeting these standards. These plans must include pollution control measures that demonstrate how the standards will be met.

The 1990 amendments to the CAA that identify specific emission reduction goals for areas not meeting the NAAQS require a demonstration of reasonable further progress toward attainment and incorporate additional sanctions for failure to attain or to meet interim milestones. The sections of the CAA most directly applicable to the development of the Project site include Title I (Non-Attainment Provisions) and Title II (Mobile Source Provisions) (12) (13). Title I provisions were established with the goal of attaining the NAAQS for the following criteria pollutants O<sub>3</sub>, NO<sub>2</sub>, SO<sub>2</sub>, PM<sub>10</sub>, CO, PM<sub>2.5</sub>, and Pb. The NAAQS were amended in July 1997 to include an additional standard for O<sub>3</sub> and to adopt a NAAQS for PM<sub>2.5</sub>. Table 2-3 (previously presented) provides the NAAQS within the SCAB.

Mobile source emissions are regulated in accordance with Title II provisions. These provisions require the use of cleaner burning gasoline and other cleaner burning fuels such as methanol and natural gas. Automobile manufacturers are also required to reduce tailpipe emissions of hydrocarbons and NO<sub>x</sub>. NO<sub>x</sub> is a collective term that includes all forms of nitrogen oxides (NO, NO<sub>2</sub>, NO<sub>3</sub>) which are emitted as byproducts of the combustion process.

## **2.8.2 CALIFORNIA REGULATIONS**

**California Air Resource Board.** The CARB, which became part of the CalEPA in 1991, is responsible for ensuring implementation of the California Clean Air Act (AB 2595), responding to the federal CAA, and for regulating emissions from consumer products and motor vehicles. AB 2595 mandates achievement of the maximum degree of emissions reductions possible from vehicular and other mobile sources in order to attain the state ambient air quality standards by the earliest practical date. The CARB established the CAAQS for all pollutants for which the federal government has NAAQS and, in addition, establishes standards for sulfates, visibility, hydrogen sulfide, and vinyl chloride. However, at this time, hydrogen sulfide and vinyl chloride are not measured at any monitoring stations in the SCAB because they are not considered to be a regional air quality problem. Generally, the CAAQS are more stringent than the NAAQS (14) (10).

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

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

- Application of Best Available Retrofit Control Technology to existing sources;
- Developing control programs for area sources (e.g., architectural coatings and solvents) and indirect sources (e.g. motor vehicle use generated by residential and commercial development);



- A District permitting system designed to allow no net increase in emissions from any new or modified permitted sources of emissions;
- Implementing reasonably available transportation control measures and assuring a substantial reduction in growth rate of vehicle trips and miles traveled;
- Significant use of low emissions vehicles by fleet operators;
- Sufficient control strategies to achieve a five percent or more annual reduction in emissions or 15 percent or more in a period of three years for ROG<sub>s</sub>, NO<sub>x</sub>, CO and PM<sub>10</sub>. However, air basins may use alternative emission reduction strategy that achieves a reduction of less than five percent per year under certain circumstances.

**Title 24 Energy Efficiency Standards and California Green Building Standards.** CCR Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases greenhouse gas (GHG) emissions. The 2019 version of Title 24 was adopted by the California Energy Commission (CEC) and will become effective on January 1, 2020. As a conservative measure, the analysis herein assumes compliance with the 2016 Title 24 Standards and no additional reduction for compliance with the 2019 standards have been taken.

The CEC indicates that the 2019 Title 24 standards will require solar photovoltaic systems for new homes, establish requirements for newly constructed healthcare facilities, encourage demand responsive technologies for residential buildings, update indoor and outdoor lighting for nonresidential buildings. The CEC anticipates that single-family homes built with the 2019 standards will use approximately 7 percent less energy compared to the residential homes built under the 2016 standards. Additionally, after implementation of solar photovoltaic systems, homes built under the 2019 standards will about 53 percent less energy than homes built under the 2016 standards. Nonresidential buildings will use approximately 30 percent less energy due to lighting upgrades (15).

California Code of Regulations, Title 24, Part 11: California Green Building Standards Code (CALGreen) is a comprehensive and uniform regulatory code for all residential, commercial, and school buildings that went in effect on January 1, 2011, and is administered by the California Building Standards Commission. CALGreen is updated on a regular basis, with the most recent approved update consisting of the 2019 California Green Building Code Standards that will be effective January 1, 2020. Local jurisdictions are permitted to adopt more stringent requirements, as state law provides methods for local enhancements. CALGreen recognizes that many jurisdictions have developed existing construction and demolition ordinances and defers to them as the ruling guidance provided, they establish a minimum 65 percent diversion requirement. The code also provides exemptions for areas not served by construction and demolition recycling infrastructure. The State Building Code provides the minimum standard that buildings must meet in order to be certified for occupancy, which is generally enforced by the local building official. 2019 CALGreen standards are applicable to the Project and require (16):

- Short-term bicycle parking. If the new project or an additional alteration is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5 percent of new visitor motorized vehicle parking spaces being added, with a minimum of one two-bike capacity rack (5.106.4.1.1).
- Long-term bicycle parking. For new buildings with tenant spaces that have 10 or more tenant-occupants, provide secure bicycle parking for 5 percent of the tenant-occupant vehicular parking spaces with a minimum of one bicycle parking facility (5.106.4.1.2).
- Designated parking. In new projects or additions to alterations that add 10 or more vehicular parking spaces, provide designated parking for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles as shown in Table 5.106.5.2 (5.106.5.2).
- Construction waste management. Recycle and/or salvage for reuse a minimum of 65 percent of the nonhazardous construction and demolition waste in accordance with Section 5.408.1.1, 5.405.1.2, or 5.408.1.3; or meet a local construction and demolition waste management ordinance, whichever is more stringent (5.408.1).
- Excavated soil and land clearing debris. 100 percent of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled. For a phase project, such material may be stockpiled on site until the storage site is developed (5.408.3).
- Recycling by Occupants. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage and collection of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics, organic waste, and metals or meet a lawfully enacted local recycling ordinance, if more restrictive (5.410.1).
- Water conserving plumbing fixtures and fittings. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the following:
  - Water Closets. The effective flush volume of all water closets shall not exceed 1.28 gallons per flush (5.303.3.1)
  - Urinals. The effective flush volume of wall-mounted urinals shall not exceed 0.125 gallons per flush (5.303.3.2.1). The effective flush volume of floor-mounted or other urinals shall not exceed 0.5 gallons per flush (5.303.3.2.2).
  - Showerheads. Single showerheads shall have a minimum flow rate of not more than 1.8 gallons per minute and 80 psi (5.303.3.3.1). When a shower is served by more than one showerhead, the combine flow rate of all showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gallons per minute at 80 psi (5.303.3.3.2).
  - Faucets and fountains. Nonresidential lavatory faucets shall have a maximum flow rate of not more than 0.5 gallons per minute at 60 psi (5.303.3.4.1). Kitchen faucets shall have a maximum flow rate of not more than 1.8 gallons per minute of 60 psi (5.303.3.4.2). Wash fountains shall have a maximum flow rate of not more than 1.8 gallons per minute (5.303.3.4.3). Metering faucets shall not deliver more than 0.20 gallons per cycle (5.303.3.4.4). Metering faucets for wash fountains shall have a maximum flow rate not more than 0.20 gallons per cycle (5.303.3.4.5).
- Outdoor portable water use in landscaped areas. Nonresidential developments shall comply with a local water efficient landscape ordinance or the current California Department of Water Resources' Model Water Efficient (MWELO), whichever is more stringent (5.304.1).
- Water meters. Separate submeters or metering devices shall be installed for new buildings or additions in excess of 50,000 square feet (sf) or for excess consumption where any tenant within

a new building or within an addition that is project to consume more than 1,000 gal/day (5.303.1.1 and 5.303.1.2).

- Outdoor water use in rehabilitated landscape projects equal or greater than 2,500 sf. Rehabilitated landscape projects with an aggregate landscape area equal to or greater than 2,500 sf requiring a building or landscape permit (5.304.3).
- Commissioning. For new buildings 10,000 sf and over, building commissioning shall be included in the design and construction processes of the building project to verify that the building systems and components meet the owner's or owner representative's project requirements (5.410.2).

### **2.8.3 AIR QUALITY MANAGEMENT PLANNING**

Currently, the NAAQS and CAAQS are exceeded in most parts of the SCAB. In response, the SCAQMD has adopted a series of Air Quality Management Plans (AQMPs) to meet the state and federal ambient air quality standards (17). AQMPs are updated regularly in order to more effectively reduce emissions, accommodate growth, and to minimize any negative fiscal impacts of air pollution control on the economy. A detailed discussion on the AQMP and Project consistency with the AQMP is provided in Section 3.9.



### 3 PROJECT AIR QUALITY IMPACT

#### 3.1 INTRODUCTION

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

#### 3.2 STANDARDS OF SIGNIFICANCE

The criteria used to determine the significance of potential Project-related air quality impacts are taken from the Initial Study Checklist in Appendix G of the State CEQA Guidelines (14 CCR §§15000, et seq.). Based on these thresholds, a project would result in a significant impact related to air quality if it would (18):

- Conflict with or obstruct implementation of the applicable air quality plan.
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard.
- Expose sensitive receptors to substantial pollutant concentrations.
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

The SCAQMD has also developed regional significance thresholds for other regulated pollutants, as summarized at Table 3-1 (19). The SCAQMD's CEQA Air Quality Significance Thresholds (March 2015) indicate that any projects in the SCAB with daily emissions that exceed any of the indicated thresholds should be considered as having an individually and cumulatively significant air quality impact.

**TABLE 3-1: MAXIMUM DAILY REGIONAL EMISSIONS THRESHOLDS**

Pollutant	Construction	Operations
<b>Regional Thresholds</b>		
NO <sub>x</sub>	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM <sub>10</sub>	150 lbs/day	150 lbs/day
PM <sub>2.5</sub>	55 lbs/day	55 lbs/day
SO <sub>x</sub>	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Pb	3 lbs/day	3 lbs/day

lbs/day – Pounds Per Day

Source: Regional Thresholds presented in this table are based on the SCAQMD Air Quality Significance Thresholds, March 2015

### **3.3 CALIFORNIA EMISSIONS ESTIMATOR MODEL™ EMPLOYED TO ESTIMATE AQ EMISSIONS**

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

On October 17, 2017, the SCAQMD in conjunction with the California Air Pollution Control Officers Association (CAPCOA) and other California air districts, released the latest version of the California Emissions Estimator Model (CalEEMod) v2016.3.2. The purpose of this model is to calculate construction-source and operational-source criteria pollutant (VOCs, NO<sub>x</sub>, SO<sub>x</sub>, CO, PM<sub>10</sub>, and PM<sub>2.5</sub>) and greenhouse gas (GHG) emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from mitigation measures (20). Accordingly, the latest version of CalEEMod has been used for this Project to determine construction and operational air quality emissions. Output from the model runs for construction activity is provided in Appendix 3.1.

### **3.4 CONSTRUCTION EMISSIONS**

Construction activities associated with the Project will result in emissions of VOCs, NO<sub>x</sub>, SO<sub>x</sub>, CO, PM<sub>10</sub>, and PM<sub>2.5</sub>. Construction related emissions are expected from earthwork (excavation, compaction, soil import/export, slope grading and filling), delivery of structural materials, and pouring of concrete and paving activities.

#### Grading Activities

Dust is typically a major concern during grading activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called “fugitive emissions”. Fugitive dust emissions rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). CalEEMod was utilized to calculate fugitive dust emissions resulting from this phase of activity. Based on information provided by the Project applicant, the Project is expected to require 2,050 cubic yards (CY) of export. For purposes of analysis the CalEEMod default trip length for hauling activities of 20 miles is has been used.

#### Construction Worker Vehicle Trips

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

#### **3.4.1 CONSTRUCTION DURATION**

Construction is expected to in 2020 and will last for a duration of 24 months. For purposes of analysis, construction is expected to commence in August 2020 and will last through August 2022. Construction duration utilized in the analysis represents a “worst-case” analysis scenario should construction occur any time after the respective dates since emission factors for construction

decrease as time passes and the analysis year increases due to emission regulations becoming more stringent.<sup>2</sup>

### 3.4.2 CONSTRUCTION EQUIPMENT

The associated construction equipment is shown on Table 3-2 and is based on information provided by the Project applicant.

**TABLE 3-2: CONSTRUCTION EQUIPMENT**

Equipment	Equipment Name in CalEEMod	Amount	Duration
Tractor/Loader/Backhoe	Tractor/Loader/Backhoe	2	24 months
Excavator	Excavator	1	24 months
Dump Truck/Hauling Truck	Dumpers/Tenders	10	6 months
Delivery Truck	Off-Highway Trucks	1	24 months
Asphalt Paver	Pavers	1	5 days
Steel Wheel Roller	Rollers	1	5 days
Concrete Mixer Truck	Cement and Mortar Mixers	3	10 days
Concrete Boom Pump Truck	Other Construction Equip.	1	10 days
Truck Mounted Boom Crane	Cranes	1	10 days
Excavator with Pile Driver	Excavators	1	5 days
Bypass Pump	Pump	2	30 days
Generator	Generator Set	1	6 months

It should be noted that site specific construction fleet may vary due to specific project needs at the time of construction. As a conservative measure, the construction equipment was modeled under the assumption that each equipment would operate for up to 8 hours per typical work day (Monday-Friday) during an approximate 24-month construction period (21).

The duration of construction activity and associated equipment represents a reasonable approximation of the expected construction fleet as required per CEQA Guidelines. The duration of construction activity was based on information provided by the Project applicant and the 2022 opening year.

### 3.4.1 CONSTRUCTION EMISSIONS SUMMARY

#### *Impacts without Mitigation*

CalEEMod calculates maximum daily emissions for summer and winter periods. The estimated maximum daily construction emissions without mitigation are summarized on Table 3-3. Detailed

<sup>2</sup> As shown in the CalEEMod User's Guide Version 2016.3.2, Section 4.3 "OFFROAD Equipment" as the analysis year increases, emission factors for the same equipment pieces decrease due to the natural turnover of older equipment being replaced by newer less polluting equipment and new regulatory requirements.

construction model outputs are presented in Appendix 3.1. Under the assumed scenarios, emissions resulting from the Project construction will not exceed criteria pollutant thresholds established by the SCAQMD for emissions of any criteria pollutant.

**TABLE 3-3 OVERALL CONSTRUCTION EMISSIONS SUMMARY (WITHOUT MITIGATION)**

Year	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Summer						
2020	5.50	47.58	43.46	0.09	3.07	2.41
2021	5.06	42.82	42.73	0.09	2.77	2.13
2022	4.63	37.70	42.00	0.09	2.55	1.87
Winter						
2020	5.50	47.59	42.96	0.09	3.07	2.41
2021	5.06	42.83	42.26	0.09	2.77	2.13
2022	4.63	37.71	41.57	0.09	2.55	1.87
<b>Maximum Daily Emissions</b>	<b>5.50</b>	<b>47.59</b>	<b>43.46</b>	<b>0.09</b>	<b>3.07</b>	<b>2.41</b>
SCAQMD Regional Threshold	75	100	550	150	150	55
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

Source: CalEEMod construction-source (unmitigated) emissions are presented in Appendix 3.1.

### 3.5 OPERATIONAL EMISSIONS

Long-term air quality impacts occur from mobile source emission generated from Project-related traffic and from stationary source emissions generated from natural gas. The proposed Project primarily involves construction activity. For on-going operations, mobile emissions would be generated by the motor vehicles traveling to and from the Project sites during on-going maintenance. However, the project would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. As this Project involves upgrading the existing wastewater treatment plant with the addition of a primary clarifier, backup generator, trickling filter recirculation pumps, and a sludge dewatering building, heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the proposed Project. All operational equipment associated with the Project would be electrically powered and would not directly generate air emissions. However, the proposed Project may include the use of an emergency diesel generators supplying power to the treatment plant in case of emergency. If backup generator would be installed, the lead agency would be required to obtain the applicable permits from SCAQMD for operation of such equipment. The SCAQMD is responsible for issuing permits for the operation of stationary sources in order to reduce air pollution, and to attain and maintain NAAQS and CAAQS within the SCAB. The Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment. A backup generator would be used only in emergency situations and for routine testing and maintenance purposes. Based on guidance from SCAQMD, the backup generator would operate for a maximum of 200 hours annually or approximately 0.5 hours per day. Emissions associated with the backup generator are summarized on Table 3-4, as shown, emissions from the backup generator would not contribute a substantial amount of emissions capable of exceeding SCAQMD thresholds. As Project operations would not exceed SCAQMD thresholds, the Project would not violate an air quality standard or contribute to an existing violation. Therefore, Project operations would not result in a cumulatively considerable net increase of any criteria pollutant and impacts would be less than significant. Detailed model outputs for the backup diesel generator emissions calculations are presented in Appendix 3.2.

**TABLE 3-4: SUMMARY OF EMISSIONS FROM BACKUP DIESEL GENERATOR**

	Emissions (lbs/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>Emissions from Backup Generator</b>	0.07	0.02	0.26	3.50e-004	0.01	0.01
SCAQMD Regional Threshold	55	55	550	150	150	55
<b>Threshold Exceeded?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

### 3.6 LOCALIZED SIGNIFICANCE - CONSTRUCTION ACTIVITY

#### BACKGROUND ON LOCALIZED SIGNIFICANCE THRESHOLD (LST) DEVELOPMENT

The analysis makes use of methodology included in the SCAQMD *Final Localized Significance Threshold Methodology* (LST Methodology) (22). The SCAQMD has established that impacts to air quality are significant if there is a potential to contribute or cause localized exceedances of the NAAQS and CAAQS. Collectively, these are referred to as Localized Significance Thresholds (LSTs).

The significance of localized emissions impacts depends on whether ambient levels in the vicinity of any given project are above or below State standards. In the case of CO and NO<sub>2</sub>, if ambient levels are below the standards, a project is considered to have a significant impact if project emissions result in an exceedance of one or more of these standards. If ambient levels already exceed a state or federal standard, then project emissions are considered significant if they increase ambient concentrations by a measurable amount. This would apply to PM<sub>10</sub> and PM<sub>2.5</sub>; both of which are non-attainment pollutants.

The SCAQMD established LSTs in response to the SCAQMD Governing Board's Environmental Justice Initiative I-4<sup>3</sup>. LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard at the nearest residence or sensitive receptor. The SCAQMD states that lead agencies can use the LSTs as another indicator of significance in its air quality impact analyses.

LSTs were developed in response to environmental justice and health concerns raised by the public regarding exposure of individuals to criteria pollutants in local communities. To address the issue of localized significance, the SCAQMD adopted LSTs that show whether a project would cause or contribute to localized air quality impacts and thereby cause or contribute to potential localized adverse health effects. The analysis makes use of methodology included in the *LST Methodology* (23).

#### APPLICABILITY OF LSTs FOR THE PROJECT

LSTs apply to CO, NO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub>. The SCAQMD produced look-up tables for projects less than or equal to 5 acres in size.

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

- CalEEMod is utilized to determine the maximum daily on-site emissions that will occur during construction activity.

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

- The SCAQMD's Fact Sheet for Applying CalEEMod to Localized Significance Thresholds (24) is used to determine the maximum site acreage that is actively disturbed based on the construction equipment fleet and equipment hours as estimated in CalEEMod.
- If the total acreage disturbed is less than or equal to five acres per day, then the SCAQMD's screening look-up tables are utilized to determine if a project has the potential to result in a significant impact. The look-up tables establish a maximum daily emissions threshold in pounds per day that can be compared to CalEEMod outputs.
- If the total acreage disturbed is greater than five acres per day, then LST impacts are appropriately evaluated through dispersion modeling.

#### EMISSIONS CONSIDERED

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

#### MAXIMUM DAILY DISTURBED-ACREAGE

The "acres disturbed" for analytical purposes are based on specific equipment type for each subcategory of construction activity and the estimated maximum area a given piece of equipment can pass over in an 8-hour workday (as shown on Table 3-5). The equipment-specific disturbance rates were obtained from the CalEEMod user's guide, *Appendix A: Calculation Details for CalEEMod* (October 2017). It should be noted that the disturbed area per day is representative of a piece of equipment making multiple passes over the same land area. In other words, one Rubber Tired Dozer can make multiple passes over the same land area totaling 0.5 acres in a given 8-hour day. Additionally, although *Appendix A* only identifies equipment-specific grading rates for crawler tractors, graders, rubber tired dozers, and scrapers, it is assumed that tractor/loader/backhoe equipment could also be used to grade the Project site and would disturb approximately 0.5 acres per 8-hour day. Based on Table 3-5, the proposed Project could actively disturb approximately 1.0 acre per day.

**TABLE 3-5 : MAXIMUM DAILY DISTURBED-ACREAGE**

Equipment Type	Equipment Quantity	Acres graded per 8-hour day	Operating Hours per Day	Acres graded per day
Tractor/Loader/Backhoe	2	0.5	8	1.0
Total acres disturbed per day				1.0

Source: Maximum daily disturbed acreage based on equipment list presented in Appendix 3.1.

#### SENSITIVE RECEPTORS

As previously stated, LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard at the nearest residence or sensitive receptor. Receptor locations are off-site locations where individuals may be exposed to emissions from Project activities. This AQIA

analyzes localized construction and operational emissions impacts at the nearest sensitive receptors.

Some people are especially sensitive to air pollution and are given special consideration when evaluating air quality impacts from projects. These groups of people include children, the elderly, individuals with pre-existing respiratory or cardiovascular illness, and athletes and others who engage in frequent exercise. Structures that house these persons or places where they gather to exercise are defined as “sensitive receptors”; they are also known to be locations where an individual can remain for 24 hours.

### Project-related Sensitive Receptors

The SCAQMD recommends that the nearest sensitive receptor be considered when determining the Project’s potential to cause an individual and cumulatively significant impact. The nearest sensitive receptor is a residential home located roughly 883 feet/269 meters from the Project site on Zermatt Drive. For purposes of analysis, the 269-meter receptor distance is utilized as a screening threshold to determine LSTs for emissions of NO<sub>x</sub>, CO, PM<sub>10</sub>, and PM<sub>2.5</sub>.

### **LOCALIZED THRESHOLDS FOR CONSTRUCTION ACTIVITY**

The SCAQMD’s screening look-up tables are utilized in determining impacts. It should be noted that since the look-up tables identifies thresholds at only 1 acre, 2 acres, and 5 acres, linear regression has been utilized, consistent with SCAQMD guidance, in order to interpolate the threshold values for the other disturbed acreage and distances not identified in the look-up tables. As previously stated, proposed Project could actively disturb approximately 1 acre per day.

**TABLE 3-6: MAXIMUM DAILY LOCALIZED EMISSIONS THRESHOLDS**

Pollutant	Construction
NO <sub>x</sub>	407 lbs/day
CO	9,117 lbs/day
PM <sub>10</sub>	102 lbs/day
PM <sub>2.5</sub>	40 lbs/day

Source: Localized Thresholds presented in this table are based on the SCAQMD Final Localized Significance Threshold Methodology, July 2008

### **LOCALIZED CONSTRUCTION-SOURCE EMISSIONS**

#### ***Impacts without Mitigation***

Table 3-7 identifies the localized impacts at the nearest receptor location in the vicinity of the Project. Without mitigation, localized construction emissions would not exceed the applicable SCAQMD LSTs. Outputs from the model runs for unmitigated construction LSTs are provided in Appendix 3.1.



**TABLE 3-7: LOCALIZED SIGNIFICANCE SUMMARY OF CONSTRUCTION (WITHOUT MITIGATION)**

On-Site Construction Emissions	Emissions (lbs/day)			
	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
Maximum Daily Emissions	47.17	40.60	2.33	2.21
SCAQMD Localized Threshold	407	9,117	102	40
Threshold Exceeded?	NO	NO	NO	NO

Source: CalEEMod localized construction-source emissions are presented in Appendix 3.1.

### 3.7 LOCALIZED SIGNIFICANCE – LONG-TERM OPERATIONAL ACTIVITY

According to SCAQMD localized significance threshold methodology, LSTs would apply to the operational phase of a proposed project if the project includes stationary sources or attracts mobile sources that may spend extended periods queuing and idling at the site (e.g., warehouse or transfer facilities). As previously discussed, the Project would generate a nominal number of traffic trips in the context of on-going maintenance resulting in a negligible amount of new mobile source emissions. Additionally, all pumps associated with the Project are assumed to be electrically powered and would not directly generate air emissions. However, the proposed Project may include the use of an emergency diesel generators supplying power to the treatment plant in case of emergency. If backup generator would be installed, the lead agency would be required to obtain the applicable permits from SCAQMD for operation of such equipment. The SCAQMD is responsible for issuing permits for the operation of stationary sources in order to reduce air pollution, and to attain and maintain NAAQS and CAAQS within the SCAB. Upon compliance with SCAQMD permitting procedures, localized emissions from any potential diesel generator would not result in substantial pollutant concentrations capable of exceeding operational LST thresholds as shown on Table 3-8. Therefore, the Project would not expose sensitive receptors to substantial pollutant concentrations and impacts would be less than significant.

**TABLE 3-8: LOCALIZED SIGNIFICANCE SUMMARY OF OPERATIONS**

Operational Activity	Emissions (pounds per day)			
	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
Maximum Daily Emissions				
SCAQMD Localized Threshold	407	9,117	1	1
Threshold Exceeded?	NO	NO	NO	NO

Source: CalEEMod localized operational-source emissions are presented in Appendix 3.2.

### 3.8 CO “HOT SPOT” ANALYSIS

As discussed below, the Project would not result in potentially adverse CO concentrations or “hot spots.” Further, detailed modeling of Project-specific carbon monoxide (CO) “hot spots” is not needed to reach this conclusion. An adverse CO concentration, known as a “hot spot”, would occur if an exceedance of the state one-hour standard of 20 ppm or the eight-hour standard of 9

ppm were to occur. At the time of the 1993 Handbook, the SCAB was designated nonattainment under the California AAQS and National AAQS for CO (25).

It has long been recognized that CO hotspots are caused by vehicular emissions, primarily when idling at congested intersections. In response, vehicle emissions standards have become increasingly stringent in the last twenty years. Currently, the allowable CO emissions standard in California is a maximum of 3.4 grams/mile for passenger cars (there are requirements for certain vehicles that are more stringent). With the turnover of older vehicles, introduction of cleaner fuels, and implementation of increasingly sophisticated and efficient emissions control technologies, CO concentration in the SCAB is now designated as attainment, as previously noted in Table 2-3. Also, CO concentrations in the Project vicinity have steadily declined. To establish a more accurate record of baseline CO concentrations affecting the SCAB, a CO “hot spot” analysis was conducted in 2003 for four busy intersections in Los Angeles at the peak morning and afternoon time periods. This “hot spot” analysis did not predict any violation of CO standards, as shown on Table 3-9.

**TABLE 3-9: CO MODEL RESULTS**

Intersection Location	Carbon Monoxide Concentrations (ppm)		
	Morning 1-hour	Afternoon 1-hour	8-hour
Wilshire-Veteran	4.6	3.5	3.7
Sunset-Highland	4	4.5	3.5
La Cienega-Century	3.7	3.1	5.2
Long Beach-Imperial	3	3.1	8.4

Source: 2003 AQMP, Appendix V: Modeling and Attainment Demonstrations

Notes: Federal 1-hour standard is 35 ppm and the deferral 8-hour standard is 9.0 ppm.

Based on the SCAQMD's 2003 AQMP and the 1992 Federal Attainment Plan for Carbon Monoxide (1992 CO Plan), peak carbon monoxide concentrations in the SCAB were a result of unusual meteorological and topographical conditions and not a result of traffic volumes and congestion at a particular intersection. As evidence of this, for example, 8.4 ppm CO concentration measured at the Long Beach Blvd. and Imperial Hwy. intersection (highest CO generating intersection within the “hot spot” analysis), only 0.7 ppm was attributable to the traffic volumes and congestion at this intersection; the remaining 7.7 ppm were due to the ambient air measurements at the time the 2003 AQMP was prepared (25). Therefore, even if the traffic volumes for the proposed Project were double or even triple of the traffic volumes generated at the Long Beach Blvd. and Imperial Hwy. intersection, coupled with the on-going improvements in ambient air quality, the Project would not be capable of resulting in a CO “hot spot” at any study area intersections.

Similar considerations are also employed by other Air Districts when evaluating potential CO concentration impacts. More specifically, the Bay Area Air Quality Management District (BAAQMD) concludes that under existing and future vehicle emission rates, a given project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour—

or 24,000 vehicles per hour where vertical and/or horizontal air does not mix—in order to generate a significant CO impact (26).

Traffic volumes generating the CO concentrations for the “hot spot” analysis, shown on Table 3-10. The busiest intersection evaluated was that at Wilshire Blvd. and Veteran Ave., which has a daily traffic volume of approximately 100,000 vehicles per day. The 2003 AQMP estimated that the 1-hour concentration for this intersection was 4.6 ppm; this indicates that, should the daily traffic volume increase four times to 400,000 vehicles per day, CO concentrations (4.6 ppm x 4 = 18.4 ppm) would still not likely exceed the most stringent 1-hour CO standard (20.0 ppm).<sup>4</sup> At buildout of the Project, the highest daily traffic volumes generated at the roadways within the vicinity of the Project are expected to generate less than the highest daily traffic volumes generated at the busiest intersection in the CO “hot spot” analysis. As such, the Project would not likely exceed the most stringent 1-hour CO standard.

**TABLE 3-10: TRAFFIC VOLUMES**

Intersection Location	Peak Traffic Volumes (vph)				
	Eastbound (AM/PM)	Westbound (AM/PM)	Southbound (AM/PM)	Northbound (AM/PM)	Total (AM/PM)
Wilshire-Veteran	4,954/2,069	1,830/3,317	721/1,400	560/933	8,062/7,719
Sunset-Highland	1,417/1,764	1,342/1,540	2,304/1,832	1,551/2,238	6,614/5,374
La Cienega-Century	2,540/2,243	1,890/2,728	1,384/2,029	821/1,674	6,634/8,674
Long Beach-Imperial	1,217/2,020	1,760/1,400	479/944	756/1,150	4,212/5,514

vph – Vehicles Per Hour

Source: 2003 AQMP

### 3.9 AIR QUALITY MANAGEMENT PLANNING

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

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

<sup>4</sup> Based on the ratio of the CO standard (20.0 ppm) and the modeled value (4.6 ppm).

In March 2017, the AQMD released the Final 2016 AQMP. The 2016 AQMP continues to evaluate current integrated strategies and control measures to meet the NAAQS, as well as, explore new and innovative methods to reach its goals. Some of these approaches include utilizing incentive programs, recognizing existing co-benefit programs from other sectors, and developing a strategy with fair-share reductions at the federal, state, and local levels (27). Similar to the 2012 AQMP, the 2016 AQMP incorporates scientific and technological information and planning assumptions, including the 2016 Regional Transportation Plan/ Sustainable Communities Strategy (RTP/SCS), a planning document that supports the integration of land use and transportation to help the region meet the federal Clean Air Act requirements (17). The Project's consistency with the AQMP will be determined using the 2016 AQMP as discussed below.

Criteria for determining consistency with the AQMP are defined in Chapter 12, Section 12.2 and Section 12.3 of the SCAQMD's CEQA Air Quality Handbook (1993) (28). These indicators are discussed below:

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

The violations that Consistency Criterion No. 1 refers to are the CAAQS and NAAQS. CAAQS and NAAQS violations would occur if regional or localized significance thresholds were exceeded.

#### Construction Impacts – Consistency Criterion 1

The violations that Consistency Criterion No. 1 refers to are the CAAQS and NAAQS. CAAQS and NAAQS violations would occur if localized or regional significance thresholds were exceeded. The Project would not exceed the applicable LST thresholds or regional significance thresholds for construction activity. Therefore, the Project would not conflict with the AQMP according to this criterion.

On the basis of the preceding discussion, the Project would not conflict with the AQMP according to this criterion.

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

The 2016 AQMP demonstrates that the applicable ambient air quality standards can be achieved within the timeframes required under federal law. Growth projections from local general plans adopted by cities and county in the district are provided to the SCAG, which develops regional growth forecasts, which are then used to develop future air quality forecasts for the AQMP. Development consistent with the growth projections in County of San Bernardino General Plan is considered to be consistent with the AQMP.

#### Construction Impacts

Peak day emissions generated by construction activities are largely independent of land use assignments, but rather are a function of development scope and maximum area of disturbance.

Irrespective of the site's land use designation, development of the site to its maximum potential would likely occur, with disturbance of the entire site occurring during construction activities.

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

### **AQMP Consistency Conclusion**

The Project would not result in or cause NAAQS or CAAQS violations. The Project's does not propose a land use development but rather involves upgrading the existing wastewater treatment plant with the addition of a primary clarifier, backup generator, trickling filter recirculation pumps, and a sludge dewatering building. The Project is therefore considered to be consistent with the AQMP.

### **3.10 POTENTIAL IMPACTS TO SENSITIVE RECEPTORS**

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

Results of the LST analysis indicate that, the Project would not exceed the SCAQMD localized significance thresholds during construction. Therefore, sensitive receptors would not be exposed to substantial pollutant concentrations during Project construction.

Results of the LST analysis indicate that the Project would not exceed the SCAQMD localized significance thresholds during construction activity. Further Project traffic would not create or result in a CO "hotspot." Therefore, sensitive receptors would not be exposed to substantial pollutant concentrations as the result of Project construction.

### **3.11 ODORS**

Operation of the wastewater treatment plant (WWTP) has the potential to result in odor impacts because of the nature of the activities at the proposed facility. However, the frequency with which the facility would expose the public to objectionable odors would be minimal based on the control measures planned in the design. Active ventilation through odor control units would be located to manage gases from the solids stream treatment processes. All processes and equipment would be housed (or otherwise contained) and ventilation controlled such that no objectionable odors would be discernible at the Project site boundaries.

Odors are typically associated with particular steps in the wastewater treatment process. Initially, raw wastewater is transferred to the primary clarifiers where most solids are separated from the liquid portion of wastewater in the treatment process. Primary clarifiers are typically uncovered and produce no objectionable odors.

Odor control for the sludge handling and dewatering facilities will consist of ventilation through Fiberglass Reinforced Plastic (FRP) ducting to a bio filter.

Bio filters remove odor by capturing the odor causing compounds in a media bed where they are oxidized by naturally occurring micro-organisms.

Facilities that cause nuisance odors are subject to enforcement action by the SCAQMD. The SCAQMD responds to odor complaints by investigating the complaint determining whether the odor violated SCAQMD Rule 402 (29). The inspector will take enforcement action if the source is not in compliance with SCAQMD rules and regulations and will inform the complainant of investigation results. In the event of enforcement action, odor-causing impacts must be mitigated by appropriate means to reduce the impacts to sensitive receptors. Such means include shutdown of odor sources or requirements to control odors using add-on equipment.

The odor control design for the facility would be such that no perceptible odors would be detected by nearby residences or other sensitive receptors. Additionally, disposal of biosolids could also contribute to odors and increase air emissions at these end-use facilities. However, the County would only allow facilities that have addressed all site-specific impacts. Therefore, this impact would be less than significant.

### 3.12 CUMULATIVE IMPACTS

As previously shown in Table 2-3, the Project area is designated as a non-attainment area for ozone, PM<sub>10</sub>, and PM<sub>2.5</sub>.

The AQMD has published a report on how to address cumulative impacts from air pollution: *White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution* (30). In this report the AQMD clearly states (Page D-3):

*...the AQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or Environmental Impact Report (EIR). The only case where the significance thresholds for project specific and cumulative impacts differ is the Hazard Index (HI) significance threshold for toxic air contaminant (TAC) emissions. The project specific (project increment) significance threshold is HI > 1.0 while the cumulative (facility-wide) is HI > 3.0. It should be noted that the HI is only one of three TAC emission significance thresholds considered (when applicable) in a CEQA analysis. The other two are the maximum individual cancer risk (MICR) and the cancer burden, both of which use the same significance thresholds (MICR of 10 in 1 million and cancer burden of 0.5) for project specific and cumulative impacts.*

*Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant.*

Therefore, this analysis assumes that individual projects that do not generate operational or construction emissions that exceed the SCAQMD's recommended daily thresholds for project-specific impacts would also not cause a cumulatively considerable increase in emissions for those

pollutants for which the Basin is in nonattainment, and, therefore, would not be considered to have a significant, adverse air quality impact. Alternatively, individual project-related construction and operational emissions that exceed SCAQMD thresholds for project-specific impacts would be considered cumulatively considerable.

#### Construction Impacts

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

#### Operational Impacts

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

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## **5 CERTIFICATIONS**

The contents of this air study report represent an accurate depiction of the environmental impacts associated with the proposed Crestline Sanitation District Huston Creek (WWTP) Dewatering Building and Primary Clarifier Project. The information contained in this air quality impact assessment report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 336-5987.

Haseeb Qureshi  
Associate Principal  
URBAN CROSSROADS, INC.  
260 E. Baker Street, Suite 200  
Costa Mesa, CA 92626  
(949) 336-5987  
[hqureshi@urbanxroads.com](mailto:hqureshi@urbanxroads.com)

### **EDUCATION**

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

Bachelor of Arts in Environmental Analysis and Design  
University of California, Irvine • June, 2006

### **PROFESSIONAL AFFILIATIONS**

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

### **PROFESSIONAL CERTIFICATIONS**

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

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## **APPENDIX 2.1:**

### **STATE/FEDERAL ATTAINMENT STATUS OF CRITERIA POLLUTANTS**

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## **APPENDIX 3.1:**

### **CALEEMOD CONSTRUCTION UNMITIGATED EMISSIONS MODEL OUTPUTS**

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## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Summer

## Crestline Sanitation (Construction - Unmitigated)

### San Bernardino-South Coast County, Summer

## 1.0 Project Characteristics

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### 1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	4.38	1000sqft	0.10	4,383.00	0

### 1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	10			Operational Year	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

### 1.3 User Entered Comments & Non-Default Data

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Summer

Project Characteristics -

Land Use -

Construction Phase - Per the Project Description, Construction is expected to begin in 2020 and last approximately 24 months.

Off-road Equipment - Construction Equipment adjusted as per information provided in the Project Description.

Grading - Total acres graded based on the assumption that the use of Tractors/Loader/Backhoe equipment (2) would disturb up to 1 acre per day.

Vehicle Trips - Construction Run Only.

Energy Use - Construction Run Only.

Water And Wastewater - Construction Run Only.

Solid Waste - Construction Run Only.

Construction Off-road Equipment Mitigation - Rule 403

Trips and VMT - As per information provided by the Project applicant, it is estimated that 205 truckloads (one-way) or 410 truckloads (two-way) will be required to removal excavated material.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	2.00	540.00
tblConstructionPhase	PhaseEndDate	3/3/2020	3/25/2022
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24NG	15.36	0.00
tblGrading	AcresOfGrading	0.00	1.00
tblGrading	MaterialExported	0.00	2,050.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblSolidWaste	LandfillCaptureGasFlare	94.00	0.00
tblSolidWaste	LandfillNoGasCapture	6.00	0.00

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Summer

tblSolidWaste	SolidWasteGenerationRate	5.43	0.00
tblTripsAndVMT	HaulingTripNumber	256.00	410.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TTP	28.00	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TTP	13.00	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TTP	59.00	0.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	0.00
tblVehicleTrips	ST_TR	1.32	0.00
tblVehicleTrips	SU_TR	0.68	0.00
tblVehicleTrips	WD_TR	6.97	0.00
tblWater	IndoorWaterUseRate	1,012,875.00	0.00

## 2.0 Emissions Summary

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## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Summer

**2.1 Overall Construction (Maximum Daily Emission)****Unmitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	5.4951	47.5789	43.4592	0.0861	0.7346	2.3340	3.0686	0.1943	2.2138	2.4081	0.0000	8,152.561 1	8,152.561 1	1.7513	0.0000	8,196.343 7
2021	5.0610	42.8195	42.7258	0.0859	0.7306	2.0402	2.7708	0.1933	1.9362	2.1295	0.0000	8,129.102 1	8,129.102 1	1.7392	0.0000	8,172.582 1
2022	4.6326	37.6956	41.9969	0.0857	0.8002	1.7497	2.5499	0.2104	1.6637	1.8741	0.0000	8,104.429 6	8,104.429 6	1.7308	0.0000	8,147.699 9
Maximum	5.4951	47.5789	43.4592	0.0861	0.8002	2.3340	3.0686	0.2104	2.2138	2.4081	0.0000	8,152.561 1	8,152.561 1	1.7513	0.0000	8,196.343 7

**Mitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	5.4951	47.5789	43.4592	0.0861	0.7331	2.3340	3.0672	0.1941	2.2138	2.4079	0.0000	8,152.561 1	8,152.561 1	1.7513	0.0000	8,196.343 7
2021	5.0610	42.8195	42.7258	0.0859	0.7291	2.0402	2.7693	0.1931	1.9362	2.1294	0.0000	8,129.102 1	8,129.102 1	1.7392	0.0000	8,172.582 1
2022	4.6326	37.6956	41.9969	0.0857	0.7987	1.7497	2.5484	0.2102	1.6637	1.8739	0.0000	8,104.429 6	8,104.429 6	1.7308	0.0000	8,147.699 9
Maximum	5.4951	47.5789	43.4592	0.0861	0.7987	2.3340	3.0672	0.2102	2.2138	2.4079	0.0000	8,152.561 1	8,152.561 1	1.7513	0.0000	8,196.343 7

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Summer

	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
Percent Reduction	0.00	0.00	0.00	0.00	0.19	0.00	0.05	0.09	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Summer

**2.2 Overall Operational****Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0980	0.0000	4.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		9.6000e-004	9.6000e-004	0.0000		1.0200e-003
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
Mobile	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
<b>Total</b>	<b>0.0980</b>	<b>0.0000</b>	<b>4.5000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>9.6000e-004</b>	<b>9.6000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.0200e-003</b>

**Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0980	0.0000	4.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		9.6000e-004	9.6000e-004	0.0000		1.0200e-003
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
Mobile	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
<b>Total</b>	<b>0.0980</b>	<b>0.0000</b>	<b>4.5000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>9.6000e-004</b>	<b>9.6000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.0200e-003</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Summer

	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
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	Grading	Grading	3/2/2020	3/25/2022	5	540	

**Acres of Grading (Site Preparation Phase): 0****Acres of Grading (Grading Phase): 1****Acres of Paving: 0****Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)****OffRoad Equipment**

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Cement and Mortar Mixers	3	8.00	9	0.56
Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Grading	Cranes	1	8.00	231	0.29
Grading	Dumpers/Tenders	10	8.00	16	0.38
Grading	Excavators	2	8.00	158	0.38
Grading	Generator Sets	1	8.00	84	0.74
Grading	Off-Highway Trucks	1	8.00	402	0.38
Grading	Other Construction Equipment	1	8.00	172	0.42
Grading	Pavers	1	8.00	130	0.42
Grading	Pumps	2	8.00	84	0.74
Grading	Rollers	1	8.00	80	0.38
Grading	Rubber Tired Dozers	0	1.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37

**Trips and VMT**

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	25	63.00	0.00	410.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**

Water Exposed Area



## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Summer

**3.2 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	lb/day										lb/day					
Fugitive Dust					2.3900e-003	0.0000	2.3900e-003	2.8000e-004	0.0000	2.8000e-004			0.0000			0.0000
Off-Road	5.1465	47.1712	40.5984	0.0784		2.3289	2.3289		2.2090	2.2090		7,377.3839	7,377.3839	1.7262		7,420.5379
<b>Total</b>	<b>5.1465</b>	<b>47.1712</b>	<b>40.5984</b>	<b>0.0784</b>	<b>2.3900e-003</b>	<b>2.3289</b>	<b>2.3312</b>	<b>2.8000e-004</b>	<b>2.2090</b>	<b>2.2093</b>		<b>7,377.3839</b>	<b>7,377.3839</b>	<b>1.7262</b>		<b>7,420.5379</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.7200e-003	0.1870	0.0276	6.0000e-004	0.0280	5.6000e-004	0.0286	7.2500e-003	5.3000e-004	7.7900e-003		63.2241	63.2241	3.4100e-003		63.3094
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3438	0.2207	2.8333	7.1500e-003	0.7042	4.6100e-003	0.7088	0.1868	4.2500e-003	0.1910		711.9530	711.9530	0.0217		712.4964
<b>Total</b>	<b>0.3486</b>	<b>0.4077</b>	<b>2.8609</b>	<b>7.7500e-003</b>	<b>0.7322</b>	<b>5.1700e-003</b>	<b>0.7374</b>	<b>0.1940</b>	<b>4.7800e-003</b>	<b>0.1988</b>		<b>775.1771</b>	<b>775.1771</b>	<b>0.0251</b>		<b>775.8058</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Summer

**3.2 Grading - 2020****Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.3000e-004	0.0000	9.3000e-004	1.1000e-004	0.0000	1.1000e-004			0.0000			0.0000
Off-Road	5.1465	47.1712	40.5984	0.0784		2.3289	2.3289		2.2090	2.2090	0.0000	7,377.3839	7,377.3839	1.7262		7,420.5379
<b>Total</b>	<b>5.1465</b>	<b>47.1712</b>	<b>40.5984</b>	<b>0.0784</b>	<b>9.3000e-004</b>	<b>2.3289</b>	<b>2.3298</b>	<b>1.1000e-004</b>	<b>2.2090</b>	<b>2.2091</b>	<b>0.0000</b>	<b>7,377.3839</b>	<b>7,377.3839</b>	<b>1.7262</b>		<b>7,420.5379</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.7200e-003	0.1870	0.0276	6.0000e-004	0.0280	5.6000e-004	0.0286	7.2500e-003	5.3000e-004	7.7900e-003		63.2241	63.2241	3.4100e-003		63.3094
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3438	0.2207	2.8333	7.1500e-003	0.7042	4.6100e-003	0.7088	0.1868	4.2500e-003	0.1910		711.9530	711.9530	0.0217		712.4964
<b>Total</b>	<b>0.3486</b>	<b>0.4077</b>	<b>2.8609</b>	<b>7.7500e-003</b>	<b>0.7322</b>	<b>5.1700e-003</b>	<b>0.7374</b>	<b>0.1940</b>	<b>4.7800e-003</b>	<b>0.1988</b>		<b>775.1771</b>	<b>775.1771</b>	<b>0.0251</b>		<b>775.8058</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Summer

**3.2 Grading - 2021****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3900e-003	0.0000	2.3900e-003	2.8000e-004	0.0000	2.8000e-004			0.0000			0.0000
Off-Road	4.7364	42.4485	40.0909	0.0784		2.0352	2.0352		1.9316	1.9316		7,377.1781	7,377.1781	1.7162		7,420.0837
<b>Total</b>	<b>4.7364</b>	<b>42.4485</b>	<b>40.0909</b>	<b>0.0784</b>	<b>2.3900e-003</b>	<b>2.0352</b>	<b>2.0376</b>	<b>2.8000e-004</b>	<b>1.9316</b>	<b>1.9319</b>		<b>7,377.1781</b>	<b>7,377.1781</b>	<b>1.7162</b>		<b>7,420.0837</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.5100e-003	0.1732	0.0268	5.9000e-004	0.0240	4.9000e-004	0.0245	6.2800e-003	4.7000e-004	6.7500e-003		62.6533	62.6533	3.3600e-003		62.7373
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3201	0.1979	2.6081	6.9200e-003	0.7042	4.5000e-003	0.7087	0.1868	4.1500e-003	0.1909		689.2707	689.2707	0.0196		689.7612
<b>Total</b>	<b>0.3246</b>	<b>0.3710</b>	<b>2.6349</b>	<b>7.5100e-003</b>	<b>0.7282</b>	<b>4.9900e-003</b>	<b>0.7332</b>	<b>0.1930</b>	<b>4.6200e-003</b>	<b>0.1977</b>		<b>751.9240</b>	<b>751.9240</b>	<b>0.0230</b>		<b>752.4984</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Summer

**3.2 Grading - 2021****Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.3000e-004	0.0000	9.3000e-004	1.1000e-004	0.0000	1.1000e-004			0.0000			0.0000
Off-Road	4.7364	42.4485	40.0909	0.0784		2.0352	2.0352		1.9316	1.9316	0.0000	7,377.178 1	7,377.178 1	1.7162		7,420.083 7
<b>Total</b>	<b>4.7364</b>	<b>42.4485</b>	<b>40.0909</b>	<b>0.0784</b>	<b>9.3000e-004</b>	<b>2.0352</b>	<b>2.0361</b>	<b>1.1000e-004</b>	<b>1.9316</b>	<b>1.9317</b>	<b>0.0000</b>	<b>7,377.178 1</b>	<b>7,377.178 1</b>	<b>1.7162</b>		<b>7,420.083 7</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.5100e-003	0.1732	0.0268	5.9000e-004	0.0240	4.9000e-004	0.0245	6.2800e-003	4.7000e-004	6.7500e-003		62.6533	62.6533	3.3600e-003		62.7373
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3201	0.1979	2.6081	6.9200e-003	0.7042	4.5000e-003	0.7087	0.1868	4.1500e-003	0.1909		689.2707	689.2707	0.0196		689.7612
<b>Total</b>	<b>0.3246</b>	<b>0.3710</b>	<b>2.6349</b>	<b>7.5100e-003</b>	<b>0.7282</b>	<b>4.9900e-003</b>	<b>0.7332</b>	<b>0.1930</b>	<b>4.6200e-003</b>	<b>0.1977</b>		<b>751.9240</b>	<b>751.9240</b>	<b>0.0230</b>		<b>752.4984</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Summer

**3.2 Grading - 2022****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3900e-003	0.0000	2.3900e-003	2.8000e-004	0.0000	2.8000e-004			0.0000			0.0000
Off-Road	4.3295	37.3589	39.5749	0.0784		1.7449	1.7449		1.6593	1.6593		7,378.0729	7,378.0729	1.7099		7,420.8214
<b>Total</b>	<b>4.3295</b>	<b>37.3589</b>	<b>39.5749</b>	<b>0.0784</b>	<b>2.3900e-003</b>	<b>1.7449</b>	<b>1.7473</b>	<b>2.8000e-004</b>	<b>1.6593</b>	<b>1.6596</b>		<b>7,378.0729</b>	<b>7,378.0729</b>	<b>1.7099</b>		<b>7,420.8214</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.2600e-003	0.1588	0.0260	5.8000e-004	0.0936	4.1000e-004	0.0940	0.0234	3.9000e-004	0.0237		61.9572	61.9572	3.2800e-003		62.0391
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2989	0.1779	2.3959	6.6700e-003	0.7042	4.3700e-003	0.7086	0.1868	4.0300e-003	0.1908		664.3995	664.3995	0.0176		664.8394
<b>Total</b>	<b>0.3032</b>	<b>0.3367</b>	<b>2.4219</b>	<b>7.2500e-003</b>	<b>0.7978</b>	<b>4.7800e-003</b>	<b>0.8026</b>	<b>0.2101</b>	<b>4.4200e-003</b>	<b>0.2145</b>		<b>726.3567</b>	<b>726.3567</b>	<b>0.0209</b>		<b>726.8786</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Summer

**3.2 Grading - 2022****Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.3000e-004	0.0000	9.3000e-004	1.1000e-004	0.0000	1.1000e-004			0.0000			0.0000
Off-Road	4.3295	37.3589	39.5749	0.0784		1.7449	1.7449		1.6593	1.6593	0.0000	7,378.0729	7,378.0729	1.7099		7,420.8214
<b>Total</b>	<b>4.3295</b>	<b>37.3589</b>	<b>39.5749</b>	<b>0.0784</b>	<b>9.3000e-004</b>	<b>1.7449</b>	<b>1.7458</b>	<b>1.1000e-004</b>	<b>1.6593</b>	<b>1.6594</b>	<b>0.0000</b>	<b>7,378.0729</b>	<b>7,378.0729</b>	<b>1.7099</b>		<b>7,420.8214</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.2600e-003	0.1588	0.0260	5.8000e-004	0.0936	4.1000e-004	0.0940	0.0234	3.9000e-004	0.0237		61.9572	61.9572	3.2800e-003		62.0391
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2989	0.1779	2.3959	6.6700e-003	0.7042	4.3700e-003	0.7086	0.1868	4.0300e-003	0.1908		664.3995	664.3995	0.0176		664.8394
<b>Total</b>	<b>0.3032</b>	<b>0.3367</b>	<b>2.4219</b>	<b>7.2500e-003</b>	<b>0.7978</b>	<b>4.7800e-003</b>	<b>0.8026</b>	<b>0.2101</b>	<b>4.4200e-003</b>	<b>0.2145</b>		<b>726.3567</b>	<b>726.3567</b>	<b>0.0209</b>		<b>726.8786</b>

**4.0 Operational Detail - Mobile**

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Summer

**4.1 Mitigation Measures Mobile**

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

**4.2 Trip Summary Information**

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

**4.3 Trip Type Information**

Land Use	Miles			Trip %			Trip Purpose %		
	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
General Light Industry	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

**4.4 Fleet Mix**

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.553113	0.036408	0.180286	0.116335	0.016165	0.005101	0.018218	0.063797	0.001357	0.001565	0.005903	0.000808	0.000944

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Summer

**5.0 Energy Detail**

Historical Energy Use: N

**5.1 Mitigation Measures Energy**

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



## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Summer

**5.2 Energy by Land Use - NaturalGas****Unmitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**6.0 Area Detail****6.1 Mitigation Measures Area**

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0980	0.0000	4.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		9.6000e-004	9.6000e-004	0.0000		1.0200e-003
Unmitigated	0.0980	0.0000	4.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		9.6000e-004	9.6000e-004	0.0000		1.0200e-003

## 6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0111					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0868					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.0000e-005	0.0000	4.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		9.6000e-004	9.6000e-004	0.0000		1.0200e-003
<b>Total</b>	<b>0.0980</b>	<b>0.0000</b>	<b>4.5000e-004</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>9.6000e-004</b>	<b>9.6000e-004</b>	<b>0.0000</b>		<b>1.0200e-003</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Summer

**6.2 Area by SubCategory****Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0111					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0868					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.0000e-005	0.0000	4.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		9.6000e-004	9.6000e-004	0.0000		1.0200e-003
<b>Total</b>	<b>0.0980</b>	<b>0.0000</b>	<b>4.5000e-004</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>9.6000e-004</b>	<b>9.6000e-004</b>	<b>0.0000</b>		<b>1.0200e-003</b>

**7.0 Water Detail****7.1 Mitigation Measures Water****8.0 Waste Detail****8.1 Mitigation Measures Waste****9.0 Operational Offroad**

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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**10.0 Stationary Equipment****Fire Pumps and Emergency Generators**

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Summer

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

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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**User Defined Equipment**

Equipment Type	Number
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**11.0 Vegetation**

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## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Winter

**Crestline Sanitation (Construction - Unmitigated)**  
**San Bernardino-South Coast County, Winter****1.0 Project Characteristics**

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**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	4.38	1000sqft	0.10	4,383.00	0

**1.2 Other Project Characteristics**

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	10			Operational Year	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

**1.3 User Entered Comments & Non-Default Data**

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Winter

Project Characteristics -

Land Use -

Construction Phase - Per the Project Description, Construction is expected to begin in 2020 and last approximately 24 months.

Off-road Equipment - Construction Equipment adjusted as per information provided in the Project Description.

Grading - Total acres graded based on the assumption that the use of Tractors/Loader/Backhoe equipment (2) would disturb up to 1 acre per day.

Vehicle Trips - Construction Run Only.

Energy Use - Construction Run Only.

Water And Wastewater - Construction Run Only.

Solid Waste - Construction Run Only.

Construction Off-road Equipment Mitigation - Rule 403

Trips and VMT - As per information provided by the Project applicant, it is estimated that 205 truckloads (one-way) or 410 truckloads (two-way) will be required to removal excavated material.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	2.00	540.00
tblConstructionPhase	PhaseEndDate	3/3/2020	3/25/2022
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24NG	15.36	0.00
tblGrading	AcresOfGrading	0.00	1.00
tblGrading	MaterialExported	0.00	2,050.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblSolidWaste	LandfillCaptureGasFlare	94.00	0.00
tblSolidWaste	LandfillNoGasCapture	6.00	0.00

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Winter

tblSolidWaste	SolidWasteGenerationRate	5.43	0.00
tblTripsAndVMT	HaulingTripNumber	256.00	410.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TTP	28.00	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TTP	13.00	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TTP	59.00	0.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	0.00
tblVehicleTrips	ST_TR	1.32	0.00
tblVehicleTrips	SU_TR	0.68	0.00
tblVehicleTrips	WD_TR	6.97	0.00
tblWater	IndoorWaterUseRate	1,012,875.00	0.00

## 2.0 Emissions Summary

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## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Winter

**2.1 Overall Construction (Maximum Daily Emission)****Unmitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	5.4955	47.5915	42.9586	0.0854	0.7346	2.3340	3.0686	0.1943	2.2138	2.4081	0.0000	8,077.621 9	8,077.621 9	1.7489	0.0000	8,121.345 1
2021	5.0619	42.8304	42.2607	0.0852	0.7306	2.0402	2.7708	0.1933	1.9362	2.1295	0.0000	8,056.532 9	8,056.532 9	1.7371	0.0000	8,099.960 0
2022	4.6343	37.7050	41.5665	0.0850	0.8002	1.7497	2.5499	0.2104	1.6637	1.8741	0.0000	8,034.461 0	8,034.461 0	1.7290	0.0000	8,077.684 6
Maximum	5.4955	47.5915	42.9586	0.0854	0.8002	2.3340	3.0686	0.2104	2.2138	2.4081	0.0000	8,077.621 9	8,077.621 9	1.7489	0.0000	8,121.345 1

**Mitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	5.4955	47.5915	42.9586	0.0854	0.7331	2.3340	3.0672	0.1941	2.2138	2.4079	0.0000	8,077.621 9	8,077.621 9	1.7489	0.0000	8,121.345 1
2021	5.0619	42.8304	42.2607	0.0852	0.7291	2.0402	2.7693	0.1931	1.9362	2.1294	0.0000	8,056.532 9	8,056.532 9	1.7371	0.0000	8,099.960 0
2022	4.6343	37.7050	41.5665	0.0850	0.7987	1.7497	2.5484	0.2102	1.6637	1.8740	0.0000	8,034.460 9	8,034.460 9	1.7290	0.0000	8,077.684 6
Maximum	5.4955	47.5915	42.9586	0.0854	0.7987	2.3340	3.0672	0.2102	2.2138	2.4079	0.0000	8,077.621 9	8,077.621 9	1.7489	0.0000	8,121.345 1



## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Winter

	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
Percent Reduction	0.00	0.00	0.00	0.00	0.19	0.00	0.05	0.09	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Winter

**2.2 Overall Operational****Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0980	0.0000	4.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		9.6000e-004	9.6000e-004	0.0000		1.0200e-003
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
Mobile	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
<b>Total</b>	<b>0.0980</b>	<b>0.0000</b>	<b>4.5000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>9.6000e-004</b>	<b>9.6000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.0200e-003</b>

**Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0980	0.0000	4.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		9.6000e-004	9.6000e-004	0.0000		1.0200e-003
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
Mobile	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
<b>Total</b>	<b>0.0980</b>	<b>0.0000</b>	<b>4.5000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>9.6000e-004</b>	<b>9.6000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.0200e-003</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Winter

	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
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

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#### Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	3/2/2020	3/25/2022	5	540	

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 1**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)**

#### OffRoad Equipment

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Cement and Mortar Mixers	3	8.00	9	0.56
Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Grading	Cranes	1	8.00	231	0.29
Grading	Dumpers/Tenders	10	8.00	16	0.38
Grading	Excavators	2	8.00	158	0.38
Grading	Generator Sets	1	8.00	84	0.74
Grading	Off-Highway Trucks	1	8.00	402	0.38
Grading	Other Construction Equipment	1	8.00	172	0.42
Grading	Pavers	1	8.00	130	0.42
Grading	Pumps	2	8.00	84	0.74
Grading	Rollers	1	8.00	80	0.38
Grading	Rubber Tired Dozers	0	1.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	25	63.00	0.00	410.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**

Water Exposed Area

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Winter

**3.2 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	lb/day										lb/day					
Fugitive Dust					2.3900e-003	0.0000	2.3900e-003	2.8000e-004	0.0000	2.8000e-004			0.0000			0.0000
Off-Road	5.1465	47.1712	40.5984	0.0784		2.3289	2.3289		2.2090	2.2090		7,377.3839	7,377.3839	1.7262		7,420.5379
<b>Total</b>	<b>5.1465</b>	<b>47.1712</b>	<b>40.5984</b>	<b>0.0784</b>	<b>2.3900e-003</b>	<b>2.3289</b>	<b>2.3312</b>	<b>2.8000e-004</b>	<b>2.2090</b>	<b>2.2093</b>		<b>7,377.3839</b>	<b>7,377.3839</b>	<b>1.7262</b>		<b>7,420.5379</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.9300e-003	0.1880	0.0316	5.8000e-004	0.0280	5.6000e-004	0.0286	7.2500e-003	5.4000e-004	7.7900e-003		61.5756	61.5756	3.7000e-003		61.6682
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3440	0.2322	2.3286	6.4100e-003	0.7042	4.6100e-003	0.7088	0.1868	4.2500e-003	0.1910		638.6624	638.6624	0.0191		639.1390
<b>Total</b>	<b>0.3490</b>	<b>0.4202</b>	<b>2.3602</b>	<b>6.9900e-003</b>	<b>0.7322</b>	<b>5.1700e-003</b>	<b>0.7374</b>	<b>0.1940</b>	<b>4.7900e-003</b>	<b>0.1988</b>		<b>700.2380</b>	<b>700.2380</b>	<b>0.0228</b>		<b>700.8072</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Winter

**3.2 Grading - 2020****Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.3000e-004	0.0000	9.3000e-004	1.1000e-004	0.0000	1.1000e-004			0.0000			0.0000
Off-Road	5.1465	47.1712	40.5984	0.0784		2.3289	2.3289		2.2090	2.2090	0.0000	7,377.3839	7,377.3839	1.7262		7,420.5379
<b>Total</b>	<b>5.1465</b>	<b>47.1712</b>	<b>40.5984</b>	<b>0.0784</b>	<b>9.3000e-004</b>	<b>2.3289</b>	<b>2.3298</b>	<b>1.1000e-004</b>	<b>2.2090</b>	<b>2.2091</b>	<b>0.0000</b>	<b>7,377.3839</b>	<b>7,377.3839</b>	<b>1.7262</b>		<b>7,420.5379</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.9300e-003	0.1880	0.0316	5.8000e-004	0.0280	5.6000e-004	0.0286	7.2500e-003	5.4000e-004	7.7900e-003		61.5756	61.5756	3.7000e-003		61.6682
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3440	0.2322	2.3286	6.4100e-003	0.7042	4.6100e-003	0.7088	0.1868	4.2500e-003	0.1910		638.6624	638.6624	0.0191		639.1390
<b>Total</b>	<b>0.3490</b>	<b>0.4202</b>	<b>2.3602</b>	<b>6.9900e-003</b>	<b>0.7322</b>	<b>5.1700e-003</b>	<b>0.7374</b>	<b>0.1940</b>	<b>4.7900e-003</b>	<b>0.1988</b>		<b>700.2380</b>	<b>700.2380</b>	<b>0.0228</b>		<b>700.8072</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Winter

**3.2 Grading - 2021****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3900e-003	0.0000	2.3900e-003	2.8000e-004	0.0000	2.8000e-004			0.0000			0.0000
Off-Road	4.7364	42.4485	40.0909	0.0784		2.0352	2.0352		1.9316	1.9316		7,377.1781	7,377.1781	1.7162		7,420.0837
<b>Total</b>	<b>4.7364</b>	<b>42.4485</b>	<b>40.0909</b>	<b>0.0784</b>	<b>2.3900e-003</b>	<b>2.0352</b>	<b>2.0376</b>	<b>2.8000e-004</b>	<b>1.9316</b>	<b>1.9319</b>		<b>7,377.1781</b>	<b>7,377.1781</b>	<b>1.7162</b>		<b>7,420.0837</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.7200e-003	0.1738	0.0306	5.7000e-004	0.0240	5.0000e-004	0.0245	6.2800e-003	4.8000e-004	6.7500e-003		61.0113	61.0113	3.6500e-003		61.1025
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3208	0.2081	2.1392	6.2100e-003	0.7042	4.5000e-003	0.7087	0.1868	4.1500e-003	0.1909		618.3435	618.3435	0.0172		618.7738
<b>Total</b>	<b>0.3255</b>	<b>0.3819</b>	<b>2.1699</b>	<b>6.7800e-003</b>	<b>0.7282</b>	<b>5.0000e-003</b>	<b>0.7332</b>	<b>0.1930</b>	<b>4.6300e-003</b>	<b>0.1977</b>		<b>679.3549</b>	<b>679.3549</b>	<b>0.0209</b>		<b>679.8763</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Winter

**3.2 Grading - 2021****Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.3000e-004	0.0000	9.3000e-004	1.1000e-004	0.0000	1.1000e-004			0.0000			0.0000
Off-Road	4.7364	42.4485	40.0909	0.0784		2.0352	2.0352		1.9316	1.9316	0.0000	7,377.178 1	7,377.178 1	1.7162		7,420.083 7
<b>Total</b>	<b>4.7364</b>	<b>42.4485</b>	<b>40.0909</b>	<b>0.0784</b>	<b>9.3000e-004</b>	<b>2.0352</b>	<b>2.0361</b>	<b>1.1000e-004</b>	<b>1.9316</b>	<b>1.9317</b>	<b>0.0000</b>	<b>7,377.178 1</b>	<b>7,377.178 1</b>	<b>1.7162</b>		<b>7,420.083 7</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.7200e-003	0.1738	0.0306	5.7000e-004	0.0240	5.0000e-004	0.0245	6.2800e-003	4.8000e-004	6.7500e-003		61.0113	61.0113	3.6500e-003		61.1025
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3208	0.2081	2.1392	6.2100e-003	0.7042	4.5000e-003	0.7087	0.1868	4.1500e-003	0.1909		618.3435	618.3435	0.0172		618.7738
<b>Total</b>	<b>0.3255</b>	<b>0.3819</b>	<b>2.1699</b>	<b>6.7800e-003</b>	<b>0.7282</b>	<b>5.0000e-003</b>	<b>0.7332</b>	<b>0.1930</b>	<b>4.6300e-003</b>	<b>0.1977</b>		<b>679.3549</b>	<b>679.3549</b>	<b>0.0209</b>		<b>679.8763</b>



## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Winter

**3.2 Grading - 2022****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3900e-003	0.0000	2.3900e-003	2.8000e-004	0.0000	2.8000e-004			0.0000			0.0000
Off-Road	4.3295	37.3589	39.5749	0.0784		1.7449	1.7449		1.6593	1.6593		7,378.0729	7,378.0729	1.7099		7,420.8214
<b>Total</b>	<b>4.3295</b>	<b>37.3589</b>	<b>39.5749</b>	<b>0.0784</b>	<b>2.3900e-003</b>	<b>1.7449</b>	<b>1.7473</b>	<b>2.8000e-004</b>	<b>1.6593</b>	<b>1.6596</b>		<b>7,378.0729</b>	<b>7,378.0729</b>	<b>1.7099</b>		<b>7,420.8214</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.4600e-003	0.1591	0.0296	5.7000e-004	0.0936	4.1000e-004	0.0940	0.0234	3.9000e-004	0.0238		60.3161	60.3161	3.5600e-003		60.4051
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3004	0.1870	1.9619	5.9800e-003	0.7042	4.3700e-003	0.7086	0.1868	4.0300e-003	0.1908		596.0720	596.0720	0.0155		596.4582
<b>Total</b>	<b>0.3048</b>	<b>0.3461</b>	<b>1.9916</b>	<b>6.5500e-003</b>	<b>0.7978</b>	<b>4.7800e-003</b>	<b>0.8026</b>	<b>0.2101</b>	<b>4.4200e-003</b>	<b>0.2145</b>		<b>656.3880</b>	<b>656.3880</b>	<b>0.0190</b>		<b>656.8633</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Winter

**3.2 Grading - 2022****Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.3000e-004	0.0000	9.3000e-004	1.1000e-004	0.0000	1.1000e-004			0.0000			0.0000
Off-Road	4.3295	37.3589	39.5749	0.0784		1.7449	1.7449		1.6593	1.6593	0.0000	7,378.0729	7,378.0729	1.7099		7,420.8214
<b>Total</b>	<b>4.3295</b>	<b>37.3589</b>	<b>39.5749</b>	<b>0.0784</b>	<b>9.3000e-004</b>	<b>1.7449</b>	<b>1.7458</b>	<b>1.1000e-004</b>	<b>1.6593</b>	<b>1.6594</b>	<b>0.0000</b>	<b>7,378.0729</b>	<b>7,378.0729</b>	<b>1.7099</b>		<b>7,420.8214</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.4600e-003	0.1591	0.0296	5.7000e-004	0.0936	4.1000e-004	0.0940	0.0234	3.9000e-004	0.0238		60.3161	60.3161	3.5600e-003		60.4051
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3004	0.1870	1.9619	5.9800e-003	0.7042	4.3700e-003	0.7086	0.1868	4.0300e-003	0.1908		596.0720	596.0720	0.0155		596.4582
<b>Total</b>	<b>0.3048</b>	<b>0.3461</b>	<b>1.9916</b>	<b>6.5500e-003</b>	<b>0.7978</b>	<b>4.7800e-003</b>	<b>0.8026</b>	<b>0.2101</b>	<b>4.4200e-003</b>	<b>0.2145</b>		<b>656.3880</b>	<b>656.3880</b>	<b>0.0190</b>		<b>656.8633</b>

**4.0 Operational Detail - Mobile**

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Winter

**4.1 Mitigation Measures Mobile**

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

**4.2 Trip Summary Information**

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

**4.3 Trip Type Information**

Land Use	Miles			Trip %			Trip Purpose %		
	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
General Light Industry	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

**4.4 Fleet Mix**

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.553113	0.036408	0.180286	0.116335	0.016165	0.005101	0.018218	0.063797	0.001357	0.001565	0.005903	0.000808	0.000944

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Winter

**5.0 Energy Detail**

Historical Energy Use: N

**5.1 Mitigation Measures Energy**

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

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Winter

**5.2 Energy by Land Use - NaturalGas****Unmitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**6.0 Area Detail****6.1 Mitigation Measures Area**

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0980	0.0000	4.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		9.6000e-004	9.6000e-004	0.0000		1.0200e-003
Unmitigated	0.0980	0.0000	4.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		9.6000e-004	9.6000e-004	0.0000		1.0200e-003

## 6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0111					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0868					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.0000e-005	0.0000	4.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		9.6000e-004	9.6000e-004	0.0000		1.0200e-003
<b>Total</b>	<b>0.0980</b>	<b>0.0000</b>	<b>4.5000e-004</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>9.6000e-004</b>	<b>9.6000e-004</b>	<b>0.0000</b>		<b>1.0200e-003</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Winter

**6.2 Area by SubCategory****Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0111					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0868					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.0000e-005	0.0000	4.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		9.6000e-004	9.6000e-004	0.0000		1.0200e-003
<b>Total</b>	<b>0.0980</b>	<b>0.0000</b>	<b>4.5000e-004</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>9.6000e-004</b>	<b>9.6000e-004</b>	<b>0.0000</b>		<b>1.0200e-003</b>

**7.0 Water Detail****7.1 Mitigation Measures Water****8.0 Waste Detail****8.1 Mitigation Measures Waste****9.0 Operational Offroad**

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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**10.0 Stationary Equipment****Fire Pumps and Emergency Generators**

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Winter

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

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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**User Defined Equipment**

Equipment Type	Number
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**11.0 Vegetation**

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## **APPENDIX 3.2:**

### **CALEEMOD EMERGENCY GENERATOR EMISSIONS MODEL OUTPUTS**

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## Crestline Sanitation - San Bernardino-South Coast County, Summer

## Crestline Sanitation

### San Bernardino-South Coast County, Summer

## 1.0 Project Characteristics

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### 1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	0.00	1000sqft	0.00	0.00	0

### 1.2 Other Project Characteristics

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	32
<b>Climate Zone</b>	10			<b>Operational Year</b>	2022
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MW hr)</b>	702.44	<b>CH4 Intensity (lb/MW hr)</b>	0.029	<b>N2O Intensity (lb/MW hr)</b>	0.006

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase -

Off-road Equipment - Operations Only

Trips and VMT - Operations Only

On-road Fugitive Dust - Operations Only

Architectural Coating - Operations Only

Stationary Sources - Emergency Generators and Fire Pumps -

## Crestline Sanitation - San Bernardino-South Coast County, Summer

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	100.00	0.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	0.00
tblArchitecturalCoating	EF_Parking	100.00	0.00
tblArchitecturalCoating	EF_Residential_Exterior	50.00	0.00
tblArchitecturalCoating	EF_Residential_Interior	50.00	0.00
tblOffRoadEquipment	HorsePower	78.00	0.00
tblOffRoadEquipment	LoadFactor	0.48	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOnRoadDust	AverageVehicleWeight	2.40	0.00
tblOnRoadDust	HaulingPercentPave	100.00	0.00
tblOnRoadDust	MaterialMoistureContent	0.50	0.00
tblOnRoadDust	MaterialSiltContent	8.50	0.00
tblOnRoadDust	MeanVehicleSpeed	40.00	0.00
tblOnRoadDust	RoadSiltLoading	0.10	0.00
tblOnRoadDust	VendorPercentPave	100.00	0.00
tblOnRoadDust	WorkerPercentPave	100.00	0.00
tblStationaryGeneratorsPumpsEF	CH4_EF	0.07	0.07
tblStationaryGeneratorsPumpsEF	ROG_EF	2.2480e-003	2.2477e-003
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	80.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	0.55
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	200.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	0.00
tblTripsAndVMT	VendorTripLength	6.90	0.00
tblTripsAndVMT	WorkerTripLength	14.70	0.00

## Crestline Sanitation - San Bernardino-South Coast County, Summer

**2.0 Emissions Summary**

	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
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

**2.2 Overall Operational****Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	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
Mobile	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
Stationary	0.0722	0.2355	0.2620	3.5000e-004		0.0106	0.0106		0.0106	0.0106		36.9386	36.9386	5.1800e-003		37.0681
Total	0.0722	0.2355	0.2620	3.5000e-004	0.0000	0.0106	0.0106	0.0000	0.0106	0.0106		36.9386	36.9386	5.1800e-003	0.0000	37.0681

## Crestline Sanitation - San Bernardino-South Coast County, Summer

**2.2 Overall Operational****Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	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
Mobile	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
Stationary	0.0722	0.2355	0.2620	3.5000e-004		0.0106	0.0106		0.0106	0.0106		36.9386	36.9386	5.1800e-003		37.0681
<b>Total</b>	<b>0.0722</b>	<b>0.2355</b>	<b>0.2620</b>	<b>3.5000e-004</b>	<b>0.0000</b>	<b>0.0106</b>	<b>0.0106</b>	<b>0.0000</b>	<b>0.0106</b>	<b>0.0106</b>		<b>36.9386</b>	<b>36.9386</b>	<b>5.1800e-003</b>	<b>0.0000</b>	<b>37.0681</b>

	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
<b>Percent Reduction</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

**3.0 Construction Detail****Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Architectural Coating	Architectural Coating	1/1/2020	12/31/2019	5	0	

**Acres of Grading (Site Preparation Phase): 0****Acres of Grading (Grading Phase): 0**

## Crestline Sanitation - San Bernardino-South Coast County, Summer

**Acres of Paving: 0****Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)****OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	0	0.00	0	0.00

**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
Architectural Coating	0	0.00	0.00	0.00	0.00	0.00	0.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction****4.0 Operational Detail - Mobile**

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**4.1 Mitigation Measures Mobile**

## Crestline Sanitation - San Bernardino-South Coast County, Summer

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

## 4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

## 4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	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
General Office Building	16.60	8.40	6.90	33.00	48.00	19.00	77	19	4

## 4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Office Building	0.553113	0.036408	0.180286	0.116335	0.016165	0.005101	0.018218	0.063797	0.001357	0.001565	0.005903	0.000808	0.000944

## 5.0 Energy Detail

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Historical Energy Use: N



## Crestline Sanitation - San Bernardino-South Coast County, Summer

**5.1 Mitigation Measures Energy**

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

**5.2 Energy by Land Use - NaturalGas****Unmitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Office Building	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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

## Crestline Sanitation - San Bernardino-South Coast County, Summer

**5.2 Energy by Land Use - NaturalGas****Mitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Office Building	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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**6.0 Area Detail****6.1 Mitigation Measures Area**

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

## Crestline Sanitation - San Bernardino-South Coast County, Summer

**6.2 Area by SubCategory****Unmitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	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
<b>Total</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>

**Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	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
<b>Total</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>

**7.0 Water Detail**

## Crestline Sanitation - San Bernardino-South Coast County, Summer

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**7.1 Mitigation Measures Water**

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**8.0 Waste Detail**

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**8.1 Mitigation Measures Waste**

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**9.0 Operational Offroad**

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Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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**10.0 Stationary Equipment****Fire Pumps and Emergency Generators**

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0.55	200	80	0.73	Diesel

**Boilers**

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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**User Defined Equipment**

Equipment Type	Number
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## Crestline Sanitation - San Bernardino-South Coast County, Summer

**10.1 Stationary Sources****Unmitigated/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
Equipment Type	lb/day										lb/day					
Emergency Generator - Diesel (75 - 100 HP)	0.0722	0.2355	0.2620	3.5000e-004		0.0106	0.0106		0.0106	0.0106		36.9386	36.9386	5.1800e-003		37.0681
<b>Total</b>	<b>0.0722</b>	<b>0.2355</b>	<b>0.2620</b>	<b>3.5000e-004</b>		<b>0.0106</b>	<b>0.0106</b>		<b>0.0106</b>	<b>0.0106</b>		<b>36.9386</b>	<b>36.9386</b>	<b>5.1800e-003</b>		<b>37.0681</b>

**11.0 Vegetation**

## Crestline Sanitation - San Bernardino-South Coast County, Winter

## Crestline Sanitation

### San Bernardino-South Coast County, Winter

## 1.0 Project Characteristics

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### 1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	0.00	1000sqft	0.00	0.00	0

### 1.2 Other Project Characteristics

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	32
<b>Climate Zone</b>	10			<b>Operational Year</b>	2022
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MW hr)</b>	702.44	<b>CH4 Intensity (lb/MW hr)</b>	0.029	<b>N2O Intensity (lb/MW hr)</b>	0.006

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase -

Off-road Equipment - Operations Only

Trips and VMT - Operations Only

On-road Fugitive Dust - Operations Only

Architectural Coating - Operations Only

Stationary Sources - Emergency Generators and Fire Pumps -

## Crestline Sanitation - San Bernardino-South Coast County, Winter

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	100.00	0.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	0.00
tblArchitecturalCoating	EF_Parking	100.00	0.00
tblArchitecturalCoating	EF_Residential_Exterior	50.00	0.00
tblArchitecturalCoating	EF_Residential_Interior	50.00	0.00
tblOffRoadEquipment	HorsePower	78.00	0.00
tblOffRoadEquipment	LoadFactor	0.48	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOnRoadDust	AverageVehicleWeight	2.40	0.00
tblOnRoadDust	HaulingPercentPave	100.00	0.00
tblOnRoadDust	MaterialMoistureContent	0.50	0.00
tblOnRoadDust	MaterialSiltContent	8.50	0.00
tblOnRoadDust	MeanVehicleSpeed	40.00	0.00
tblOnRoadDust	RoadSiltLoading	0.10	0.00
tblOnRoadDust	VendorPercentPave	100.00	0.00
tblOnRoadDust	WorkerPercentPave	100.00	0.00
tblStationaryGeneratorsPumpsEF	CH4_EF	0.07	0.07
tblStationaryGeneratorsPumpsEF	ROG_EF	2.2480e-003	2.2477e-003
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	80.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	0.55
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	200.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	0.00
tblTripsAndVMT	VendorTripLength	6.90	0.00
tblTripsAndVMT	WorkerTripLength	14.70	0.00

## Crestline Sanitation - San Bernardino-South Coast County, Winter

**2.0 Emissions Summary**

	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
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

**2.2 Overall Operational****Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	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
Mobile	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
Stationary	0.0722	0.2355	0.2620	3.5000e-004		0.0106	0.0106		0.0106	0.0106		36.9386	36.9386	5.1800e-003		37.0681
Total	0.0722	0.2355	0.2620	3.5000e-004	0.0000	0.0106	0.0106	0.0000	0.0106	0.0106		36.9386	36.9386	5.1800e-003	0.0000	37.0681



## Crestline Sanitation - San Bernardino-South Coast County, Winter

**2.2 Overall Operational****Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	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
Mobile	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
Stationary	0.0722	0.2355	0.2620	3.5000e-004		0.0106	0.0106		0.0106	0.0106		36.9386	36.9386	5.1800e-003		37.0681
<b>Total</b>	<b>0.0722</b>	<b>0.2355</b>	<b>0.2620</b>	<b>3.5000e-004</b>	<b>0.0000</b>	<b>0.0106</b>	<b>0.0106</b>	<b>0.0000</b>	<b>0.0106</b>	<b>0.0106</b>		<b>36.9386</b>	<b>36.9386</b>	<b>5.1800e-003</b>	<b>0.0000</b>	<b>37.0681</b>

	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
<b>Percent Reduction</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

**3.0 Construction Detail****Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Architectural Coating	Architectural Coating	1/1/2020	12/31/2019	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

## Crestline Sanitation - San Bernardino-South Coast County, Winter

**Acres of Paving: 0****Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)****OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	0	0.00	0	0.00

**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
Architectural Coating	0	0.00	0.00	0.00	0.00	0.00	0.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction****4.0 Operational Detail - Mobile**

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**4.1 Mitigation Measures Mobile**

## Crestline Sanitation - San Bernardino-South Coast County, Winter

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

## 4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

## 4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	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
General Office Building	16.60	8.40	6.90	33.00	48.00	19.00	77	19	4

## 4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Office Building	0.553113	0.036408	0.180286	0.116335	0.016165	0.005101	0.018218	0.063797	0.001357	0.001565	0.005903	0.000808	0.000944

## 5.0 Energy Detail

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Historical Energy Use: N

## Crestline Sanitation - San Bernardino-South Coast County, Winter

**5.1 Mitigation Measures Energy**

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

**5.2 Energy by Land Use - NaturalGas****Unmitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Office Building	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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

## Crestline Sanitation - San Bernardino-South Coast County, Winter

**5.2 Energy by Land Use - NaturalGas****Mitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Office Building	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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**6.0 Area Detail****6.1 Mitigation Measures Area**

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

## Crestline Sanitation - San Bernardino-South Coast County, Winter

**6.2 Area by SubCategory****Unmitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	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
<b>Total</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>

**Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	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
<b>Total</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>

**7.0 Water Detail**

## Crestline Sanitation - San Bernardino-South Coast County, Winter

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**7.1 Mitigation Measures Water**

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**8.0 Waste Detail**

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**8.1 Mitigation Measures Waste**

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**9.0 Operational Offroad**

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Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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**10.0 Stationary Equipment****Fire Pumps and Emergency Generators**

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0.55	200	80	0.73	Diesel

**Boilers**

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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**User Defined Equipment**

Equipment Type	Number
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## Crestline Sanitation - San Bernardino-South Coast County, Winter

**10.1 Stationary Sources****Unmitigated/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
Equipment Type	lb/day										lb/day					
Emergency Generator - Diesel (75 - 100 HP)	0.0722	0.2355	0.2620	3.5000e-004		0.0106	0.0106		0.0106	0.0106		36.9386	36.9386	5.1800e-003		37.0681
<b>Total</b>	<b>0.0722</b>	<b>0.2355</b>	<b>0.2620</b>	<b>3.5000e-004</b>		<b>0.0106</b>	<b>0.0106</b>		<b>0.0106</b>	<b>0.0106</b>		<b>36.9386</b>	<b>36.9386</b>	<b>5.1800e-003</b>		<b>37.0681</b>

**11.0 Vegetation**



## ***Appendix A-1***

### ***General Conformity determination***

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September 22, 2019

Ms. Julie Gilbert  
Jericho Systems, Inc.  
47 First Street  
Redlands, CA 92373

**SUBJECT: CRESTLINE SANITATION DISTRICT HUTSON CREEK (WWTP) DEWATERING BUILDING AND  
PRIMARY CLARIFIER PROJECT AIR QUALITY AND GREENHOUSE GAS ANALYSIS FOR NEPA**

Dear Ms. Julie Gilbert:

This Analysis for NEPA has been prepared for the Crestline Sanitation District Hutson Creek (WWTP) Dewatering Building and Primary Clarifier Project (Project), which is located within the census-designated community of Crestline, in the County of San Bernardino.

**AFFECTED ENVIRONMENT**

**National Ambient Air Quality Standards**

The Clean Air Act identified and established the National Ambient Air Quality Standards (NAAQS) for a number of criteria pollutants in order to protect the public health and welfare. The criteria pollutants include ozone (O<sub>3</sub>), carbon monoxide (CO), suspended particulate matter (PM), sulfur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), and lead (Pb). PM emissions are regulated in two size classes: Particulates up to 10 microns in diameter (PM<sub>10</sub>) and particulates up to 2.5 microns in diameter (PM<sub>2.5</sub>).

A region is given the status of "attainment" or "unclassified" if the NAAQS have not been exceeded. A status of "nonattainment" for particular criteria pollutants is assigned if the NAAQS have been exceeded. Once designated as nonattainment, attainment status may be achieved after three years of data showing non-exceedance of the standard. When an area is reclassified from nonattainment to attainment, it is designated as a "maintenance area," indicating the requirement to establish and enforce a plan to maintain attainment of the standard.

**General Conformity Rule**

Section 176(c) of the federal Clean Air Act states that a federal agency cannot issue a permit for, or support an activity within, a nonattainment or maintenance area unless the agency determines it will conform to the most recent U.S. Environmental Protection Agency-approved State Implementation Plan. Thus, a federal action must not:

- Cause or contribute to any new violation of a NAAQS.
- Increase the frequency or severity of any existing violation.

- Delay the timely attainment of any standard, interim emission reduction, or other milestone.

A conformity determination is required for each criteria pollutant or precursor where the total of direct and indirect emissions of the criteria pollutant or precursor in a nonattainment or maintenance area caused by the federal action would equal or exceed the General Conformity applicability rates specified in 40 C.F.R. section 93.153. Operation and maintenance emissions are considered exempt under 40 C.F.R. 93.153, therefore they are not included in the total direct and indirect effects of the federal action.

The project site is in the South Coast Air Basin (SCAB). The SCAB is composed of Orange County and the urban, non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. The climate of the SCAB is determined primarily by terrain and geography. Local climactic conditions are characterized by warm summers, mild winters, infrequent rainfall, moderate daytime on-shore breezes, and moderate humidity. The SCAB's normally mild climate is occasionally interrupted by periods of hot weather, winter storms, and hot easterly Santa Ana winds.

**Table 1** summarizes the federal attainment status of the San Bernardino County portion of the SCAB.

**TABLE 1: FEDERAL ATTAINMENT STATUS FOR CRITERIA POLLUTANTS**

Pollutant	Attainment Status	General Conformity Applicability Rates (tons/year)
Ozone	Nonattainment, Extreme	10
CO	Attainment/Maintenance	100
NO2	Attainment/Maintenance	100
SO2	Attainment	100
PM10	Attainment/Maintenance	100
PM2.5	Nonattainment	100
Pb	Attainment/Maintenance	25

The SCAB is currently in extreme nonattainment for ozone (precursors: VOC or NO<sub>x</sub>); nonattainment for PM<sub>2.5</sub>; attainment/maintenance for PM<sub>10</sub>; attainment/maintenance for NO<sub>2</sub>; attainment/maintenance for CO; and attainment/maintenance for lead (with the exception of the LA County portion of the basin which is in nonattainment). Based on the present attainment designation for the SCAB, a federal action would conform to the SIP if annual emissions are below 100 tons of CO, PM<sub>2.5</sub>, PM<sub>10</sub>, NO<sub>2</sub>, or Pb, 10 tons of VOC, or 25 tons of lead.

## Greenhouse Gases

Gases that trap heat in the atmosphere are often called greenhouse gases (GHG). GHGs are emitted by natural processes and human activities. Examples of GHGs that are produced both by natural processes and industry include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O). Currently, there are no Federal standards for GHG emissions, and no Federal regulations have been set at this time.

## Emission Estimates Methodology

Emissions were estimated using the California Emissions Estimator Model™ (CalEEMod™) v2016.3.2 emission modeling software.

Estimates of lead emissions were not calculated. Lead emissions from mobile sources in California have significantly decreased due to the near elimination of lead in fuels. Thus, CalEEMod, the SCAQMD-approved emission modeling software, does not provide estimated emissions for lead.

Ozone (O<sub>3</sub>) formation is driven by two major classes of directly emitted precursors: nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOC). The relation between O<sub>3</sub>, NO<sub>x</sub> and VOC is driven by complex nonlinear photochemistry. Due to the variability in rates of O<sub>3</sub> formation, CalEEMod does not provide estimates for the compound. Instead, the emission estimates for VOCs is used as a surrogate for reporting O<sub>3</sub> emissions per the General Conformity Applicability Rates. Since the consumption of VOC in O<sub>3</sub> formation reaction is variable, actual O<sub>3</sub> levels are lower than those reported.

## ENVIRONMENTAL CONSEQUENCES

**No Action Alternative.** Under the No Action Alternative, the project site would remain in pre-project conditions. No construction would occur, and impacts related to air quality and objectionable odors would not occur.

## Preferred Alternative/Proposed Action

**General Conformity.** As part of the environmental review of the federal action, a general conformity evaluation has been completed pursuant to 40 C.F.R. 93.153. The general conformity regulations apply because the project is situated in San Bernardino County within the SCAB, and the County is designated as a nonattainment area for ozone, and PM<sub>2.5</sub>, as well as a attainment/maintenance area for PM<sub>10</sub>, NO<sub>2</sub>, CO and Pb.

**Table 2** summarizes the annual construction air quality emissions and associated General Conformity Applicability Rates.

**Table 3** summarizes the annual operational air quality emissions and associated General Conformity Applicability Rates.

**TABLE 2: COMPARISON OF ESTIMATED ANNUAL CONSTRUCTION EMISSIONS TO  
GENERAL CONFORMITY APPLICABILITY RATES**

Pollutant	General Conformity Applicability Rates (tons/year)	Estimated Construction Emissions (tons/year)
Ozone (VOC)	10	0.66
CO	100	5.53
NO2	100	5.53
SO2	100	0.01
PM10	100	0.36
PM2.5	100	0.28
Pb	25	0

**TABLE 3: COMPARISON OF ESTIMATED ANNUAL OPERATIONAL EMISSIONS TO  
GENERAL CONFORMITY APPLICABILITY RATES**

Pollutant	General Conformity Applicability Rates (tons/year)	Estimated Operational Emissions (tons/year)
Ozone (VOC)	10	0.01
CO	100	0.05
NO2	100	0.04
SO2	100	0
PM10	100	0.002
PM2.5	100	0.002
Pb	25	0

For all pollutants, the emissions associated with construction of the federal action would be less than the applicability rates. Therefore, a general conformity determination is not required. Little to no quantifiable and foreseeable lead emissions would be generated by the construction or operations of the proposed project. The proposed project would have no significant impacts on air quality.

**GHG Emissions.** Per discussion of GHG above, the estimated GHG emissions are included for the purpose of disclosure under NEPA. **Table 4** summarizes the annual greenhouse gas emissions.

**TABLE 4: COMPARISON OF ESTIMATED ANNUAL GREENHOUSE GAS EMISSIONS (METRIC TONS/YEAR)**

Pollutant	Estimated Construction Emissions (MT/year)	Estimated Operational Emissions (MT/year)
GHGs (CO <sub>2</sub> e)	960.65	6.11

**Objectionable Odors.** Operation of the wastewater treatment plant (WWTP) has the potential to result in odor impacts because of the nature of the activities at the proposed facility. However, the frequency with which the facility would expose the public to objectionable odors would be minimal based on the control measures planned in the design. Active ventilation through odor control units would be located to manage gases from the solids stream treatment processes. All processes and equipment would be housed (or otherwise contained) and ventilation controlled such that no objectionable odors would be discernible at the Project site boundaries.

Odors are typically associated with particular steps in the wastewater treatment process. Initially, raw wastewater is transferred to the primary clarifiers where most solids are separated from the liquid portion of wastewater in the treatment process. Primary clarifiers are typically uncovered and produce no objectionable odors.

Odor control for the sludge handling and dewatering facilities will consist of ventilation through Fiberglass Reinforced Plastic (FRP) ducting to a bio filter.

Bio filters remove odor by capturing the odor causing compounds in a media bed where they are oxidized by naturally occurring micro-organisms.

Facilities that cause nuisance odors are subject to enforcement action by the SCAQMD. The SCAQMD responds to odor complaints by investigating the complaint determining whether the odor violated SCAQMD Rule 402. The inspector will take enforcement action if the source is not in compliance with SCAQMD rules and regulations and will inform the complainant of investigation results. In the event of enforcement action, odor-causing impacts must be mitigated by appropriate means to reduce the impacts to sensitive receptors. Such means include shutdown of odor sources or requirements to control odors using add-on equipment.

The odor control design for the facility would be such that no perceptible odors would be detected by nearby residences or other sensitive receptors. Additionally, disposal of biosolids could also contribute to odors and increase air emissions at these end-use facilities. However, the County

Ms. Julie Gilbert  
Jericho Systems, Inc.  
September 22, 2019  
Page 6 of 6

would only allow facilities that have addressed all site-specific impacts. Therefore, this impact would be less than significant.

If you have any questions, please contact me directly at (949) 336-5987.

Respectfully submitted,  
URBAN CROSSROADS, INC.

A handwritten signature in black ink, appearing to read 'Haseeb Qureshi', with a stylized, flowing script.

Haseeb Qureshi  
Associate Principal



## **ATTACHMENT A: CALEEMOD OUTPUTS**



## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**Crestline Sanitation (Construction - Unmitigated)**  
**San Bernardino-South Coast County, Annual****1.0 Project Characteristics**

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**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	4.38	1000sqft	0.10	4,383.00	0

**1.2 Other Project Characteristics**

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	10			Operational Year	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

**1.3 User Entered Comments & Non-Default Data**

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

Project Characteristics -

Land Use -

Construction Phase - Per the Project Description, Construction is expected to begin in 2020 and last approximately 24 months.

Off-road Equipment - Construction Equipment adjusted as per information provided in the Project Description.

Grading - Total acres graded based on the assumption that the use of Tractors/Loader/Backhoe equipment (2) would disturb up to 1 acre per day.

Vehicle Trips - Construction Run Only.

Energy Use - Construction Run Only.

Water And Wastewater - Construction Run Only.

Solid Waste - Construction Run Only.

Construction Off-road Equipment Mitigation - Rule 403

Trips and VMT - As per information provided by the Project applicant, it is estimated that 205 truckloads (one-way) or 410 truckloads (two-way) will be required to removal excavated material.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	2.00	540.00
tblConstructionPhase	PhaseEndDate	3/3/2020	3/25/2022
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24NG	15.36	0.00
tblGrading	AcresOfGrading	0.00	1.00
tblGrading	MaterialExported	0.00	2,050.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblSolidWaste	LandfillCaptureGasFlare	94.00	0.00
tblSolidWaste	LandfillNoGasCapture	6.00	0.00

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

tblSolidWaste	SolidWasteGenerationRate	5.43	0.00
tblTripsAndVMT	HaulingTripNumber	256.00	410.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TTP	28.00	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TTP	13.00	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TTP	59.00	0.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	0.00
tblVehicleTrips	ST_TR	1.32	0.00
tblVehicleTrips	SU_TR	0.68	0.00
tblVehicleTrips	WD_TR	6.97	0.00
tblWater	IndoorWaterUseRate	1,012,875.00	0.00

## 2.0 Emissions Summary

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## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**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	0.5982	5.2130	4.7163	9.3700e-003	0.0793	0.2556	0.3349	0.0209	0.2424	0.2634	0.0000	803.8904	803.8904	0.1738	0.0000	808.2346
2021	0.6565	5.5913	5.5285	0.0111	0.0939	0.2662	0.3601	0.0248	0.2527	0.2775	0.0000	955.5097	955.5097	0.2057	0.0000	960.6518
2022	0.1382	1.1316	1.2498	2.5500e-003	0.0241	0.0525	0.0766	6.2600e-003	0.0499	0.0562	0.0000	219.0432	219.0432	0.0471	0.0000	220.2197
Maximum	0.6565	5.5913	5.5285	0.0111	0.0939	0.2662	0.3601	0.0248	0.2527	0.2775	0.0000	955.5097	955.5097	0.2057	0.0000	960.6518

**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	0.5982	5.2130	4.7163	9.3700e-003	0.0789	0.2556	0.3345	0.0209	0.2424	0.2633	0.0000	803.8895	803.8895	0.1738	0.0000	808.2338
2021	0.6565	5.5913	5.5285	0.0111	0.0935	0.2662	0.3597	0.0248	0.2527	0.2775	0.0000	955.5086	955.5086	0.2057	0.0000	960.6508
2022	0.1382	1.1316	1.2498	2.5500e-003	0.0237	0.0525	0.0762	6.2200e-003	0.0499	0.0561	0.0000	219.0429	219.0429	0.0471	0.0000	220.2194
Maximum	0.6565	5.5913	5.5285	0.0111	0.0935	0.2662	0.3597	0.0248	0.2527	0.2775	0.0000	955.5086	955.5086	0.2057	0.0000	960.6508

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

	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
Percent Reduction	0.00	0.00	0.00	0.00	0.60	0.00	0.15	0.23	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	3-2-2020	6-1-2020	1.7440	1.7440
2	6-2-2020	9-1-2020	1.7439	1.7439
3	9-2-2020	12-1-2020	1.7252	1.7252
4	12-2-2020	3-1-2021	1.5951	1.5951
5	3-2-2021	6-1-2021	1.5733	1.5733
6	6-2-2021	9-1-2021	1.5732	1.5732
7	9-2-2021	12-1-2021	1.5564	1.5564
8	12-2-2021	3-1-2022	1.4204	1.4204
9	3-2-2022	6-1-2022	0.3629	0.3629
		Highest	1.7440	1.7440

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**2.2 Overall Operational****Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0179	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1000e-004	1.1000e-004	0.0000	0.0000	1.2000e-004
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	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
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0179</b>	<b>0.0000</b>	<b>6.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.1000e-004</b>	<b>1.1000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.2000e-004</b>



## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**2.2 Overall Operational****Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0179	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1000e-004	1.1000e-004	0.0000	0.0000	1.2000e-004
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	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
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0179</b>	<b>0.0000</b>	<b>6.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.1000e-004</b>	<b>1.1000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.2000e-004</b>

	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
<b>Percent Reduction</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

**3.0 Construction Detail****Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	3/2/2020	3/25/2022	5	540	

**Acres of Grading (Site Preparation Phase): 0**

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**Acres of Grading (Grading Phase): 1****Acres of Paving: 0****Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)****OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Cement and Mortar Mixers	3	8.00	9	0.56
Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Grading	Cranes	1	8.00	231	0.29
Grading	Dumpers/Tenders	10	8.00	16	0.38
Grading	Excavators	2	8.00	158	0.38
Grading	Generator Sets	1	8.00	84	0.74
Grading	Off-Highway Trucks	1	8.00	402	0.38
Grading	Other Construction Equipment	1	8.00	172	0.42
Grading	Pavers	1	8.00	130	0.42
Grading	Pumps	2	8.00	84	0.74
Grading	Rollers	1	8.00	80	0.38
Grading	Rubber Tired Dozers	0	1.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37

**Trips and VMT**

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	25	63.00	0.00	410.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

Water Exposed Area

**3.2 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					6.5000e-004	0.0000	6.5000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.5636	5.1653	4.4455	8.5800e-003		0.2550	0.2550		0.2419	0.2419	0.0000	732.8452	732.8452	0.1715	0.0000	737.1320
<b>Total</b>	<b>0.5636</b>	<b>5.1653</b>	<b>4.4455</b>	<b>8.5800e-003</b>	<b>6.5000e-004</b>	<b>0.2550</b>	<b>0.2557</b>	<b>7.0000e-005</b>	<b>0.2419</b>	<b>0.2420</b>	<b>0.0000</b>	<b>732.8452</b>	<b>732.8452</b>	<b>0.1715</b>	<b>0.0000</b>	<b>737.1320</b>

**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	5.3000e-004	0.0210	3.2100e-003	6.0000e-005	3.0100e-003	6.0000e-005	3.0700e-003	7.8000e-004	6.0000e-005	8.4000e-004	0.0000	6.2117	6.2117	3.5000e-004	0.0000	6.2205
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0341	0.0268	0.2676	7.2000e-004	0.0756	5.1000e-004	0.0761	0.0201	4.7000e-004	0.0206	0.0000	64.8335	64.8335	1.9500e-003	0.0000	64.8822
<b>Total</b>	<b>0.0346</b>	<b>0.0478</b>	<b>0.2708</b>	<b>7.8000e-004</b>	<b>0.0787</b>	<b>5.7000e-004</b>	<b>0.0792</b>	<b>0.0209</b>	<b>5.3000e-004</b>	<b>0.0214</b>	<b>0.0000</b>	<b>71.0452</b>	<b>71.0452</b>	<b>2.3000e-003</b>	<b>0.0000</b>	<b>71.1027</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**3.2 Grading - 2020****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					2.5000e-004	0.0000	2.5000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.5635	5.1652	4.4455	8.5800e-003		0.2550	0.2550		0.2419	0.2419	0.0000	732.8443	732.8443	0.1715	0.0000	737.1311
<b>Total</b>	<b>0.5635</b>	<b>5.1652</b>	<b>4.4455</b>	<b>8.5800e-003</b>	<b>2.5000e-004</b>	<b>0.2550</b>	<b>0.2553</b>	<b>3.0000e-005</b>	<b>0.2419</b>	<b>0.2419</b>	<b>0.0000</b>	<b>732.8443</b>	<b>732.8443</b>	<b>0.1715</b>	<b>0.0000</b>	<b>737.1311</b>

**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	5.3000e-004	0.0210	3.2100e-003	6.0000e-005	3.0100e-003	6.0000e-005	3.0700e-003	7.8000e-004	6.0000e-005	8.4000e-004	0.0000	6.2117	6.2117	3.5000e-004	0.0000	6.2205
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0341	0.0268	0.2676	7.2000e-004	0.0756	5.1000e-004	0.0761	0.0201	4.7000e-004	0.0206	0.0000	64.8335	64.8335	1.9500e-003	0.0000	64.8822
<b>Total</b>	<b>0.0346</b>	<b>0.0478</b>	<b>0.2708</b>	<b>7.8000e-004</b>	<b>0.0787</b>	<b>5.7000e-004</b>	<b>0.0792</b>	<b>0.0209</b>	<b>5.3000e-004</b>	<b>0.0214</b>	<b>0.0000</b>	<b>71.0452</b>	<b>71.0452</b>	<b>2.3000e-003</b>	<b>0.0000</b>	<b>71.1027</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**3.2 Grading - 2021****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					6.5000e-004	0.0000	6.5000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.6181	5.5395	5.2319	0.0102		0.2656	0.2656		0.2521	0.2521	0.0000	873.3665	873.3665	0.2032	0.0000	878.4460
<b>Total</b>	<b>0.6181</b>	<b>5.5395</b>	<b>5.2319</b>	<b>0.0102</b>	<b>6.5000e-004</b>	<b>0.2656</b>	<b>0.2662</b>	<b>7.0000e-005</b>	<b>0.2521</b>	<b>0.2522</b>	<b>0.0000</b>	<b>873.3665</b>	<b>873.3665</b>	<b>0.2032</b>	<b>0.0000</b>	<b>878.4460</b>

**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	6.0000e-004	0.0231	3.7200e-003	8.0000e-005	3.0700e-003	6.0000e-005	3.1400e-003	8.0000e-004	6.0000e-005	8.7000e-004	0.0000	7.3357	7.3357	4.1000e-004	0.0000	7.3461
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0378	0.0286	0.2929	8.3000e-004	0.0902	5.9000e-004	0.0907	0.0239	5.4000e-004	0.0245	0.0000	74.8075	74.8075	2.0900e-003	0.0000	74.8598
<b>Total</b>	<b>0.0384</b>	<b>0.0518</b>	<b>0.2967</b>	<b>9.1000e-004</b>	<b>0.0932</b>	<b>6.5000e-004</b>	<b>0.0939</b>	<b>0.0247</b>	<b>6.0000e-004</b>	<b>0.0254</b>	<b>0.0000</b>	<b>82.1432</b>	<b>82.1432</b>	<b>2.5000e-003</b>	<b>0.0000</b>	<b>82.2059</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**3.2 Grading - 2021****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					2.5000e-004	0.0000	2.5000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.6181	5.5395	5.2319	0.0102		0.2656	0.2656		0.2521	0.2521	0.0000	873.3654	873.3654	0.2032	0.0000	878.4449
<b>Total</b>	<b>0.6181</b>	<b>5.5395</b>	<b>5.2319</b>	<b>0.0102</b>	<b>2.5000e-004</b>	<b>0.2656</b>	<b>0.2658</b>	<b>3.0000e-005</b>	<b>0.2521</b>	<b>0.2521</b>	<b>0.0000</b>	<b>873.3654</b>	<b>873.3654</b>	<b>0.2032</b>	<b>0.0000</b>	<b>878.4449</b>

**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	6.0000e-004	0.0231	3.7200e-003	8.0000e-005	3.0700e-003	6.0000e-005	3.1400e-003	8.0000e-004	6.0000e-005	8.7000e-004	0.0000	7.3357	7.3357	4.1000e-004	0.0000	7.3461
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0378	0.0286	0.2929	8.3000e-004	0.0902	5.9000e-004	0.0907	0.0239	5.4000e-004	0.0245	0.0000	74.8075	74.8075	2.0900e-003	0.0000	74.8598
<b>Total</b>	<b>0.0384</b>	<b>0.0518</b>	<b>0.2967</b>	<b>9.1000e-004</b>	<b>0.0932</b>	<b>6.5000e-004</b>	<b>0.0939</b>	<b>0.0247</b>	<b>6.0000e-004</b>	<b>0.0254</b>	<b>0.0000</b>	<b>82.1432</b>	<b>82.1432</b>	<b>2.5000e-003</b>	<b>0.0000</b>	<b>82.2059</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**3.2 Grading - 2022****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.5000e-004	0.0000	6.5000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1299	1.1208	1.1873	2.3500e-003		0.0524	0.0524		0.0498	0.0498	0.0000	200.7983	200.7983	0.0465	0.0000	201.9617
<b>Total</b>	<b>0.1299</b>	<b>1.1208</b>	<b>1.1873</b>	<b>2.3500e-003</b>	<b>6.5000e-004</b>	<b>0.0524</b>	<b>0.0530</b>	<b>7.0000e-005</b>	<b>0.0498</b>	<b>0.0499</b>	<b>0.0000</b>	<b>200.7983</b>	<b>200.7983</b>	<b>0.0465</b>	<b>0.0000</b>	<b>201.9617</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3000e-004	4.8700e-003	8.3000e-004	2.0000e-005	2.7500e-003	1.0000e-005	2.7600e-003	6.9000e-004	1.0000e-005	7.0000e-004	0.0000	1.6674	1.6674	9.0000e-005	0.0000	1.6698
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.1300e-003	5.9100e-003	0.0618	1.8000e-004	0.0207	1.3000e-004	0.0209	5.5000e-003	1.2000e-004	5.6200e-003	0.0000	16.5775	16.5775	4.3000e-004	0.0000	16.5883
<b>Total</b>	<b>8.2600e-003</b>	<b>0.0108</b>	<b>0.0626</b>	<b>2.0000e-004</b>	<b>0.0235</b>	<b>1.4000e-004</b>	<b>0.0236</b>	<b>6.1900e-003</b>	<b>1.3000e-004</b>	<b>6.3200e-003</b>	<b>0.0000</b>	<b>18.2449</b>	<b>18.2449</b>	<b>5.2000e-004</b>	<b>0.0000</b>	<b>18.2580</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**3.2 Grading - 2022****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					2.5000e-004	0.0000	2.5000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1299	1.1208	1.1873	2.3500e-003		0.0524	0.0524		0.0498	0.0498	0.0000	200.7980	200.7980	0.0465	0.0000	201.9614
<b>Total</b>	<b>0.1299</b>	<b>1.1208</b>	<b>1.1873</b>	<b>2.3500e-003</b>	<b>2.5000e-004</b>	<b>0.0524</b>	<b>0.0526</b>	<b>3.0000e-005</b>	<b>0.0498</b>	<b>0.0498</b>	<b>0.0000</b>	<b>200.7980</b>	<b>200.7980</b>	<b>0.0465</b>	<b>0.0000</b>	<b>201.9614</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3000e-004	4.8700e-003	8.3000e-004	2.0000e-005	2.7500e-003	1.0000e-005	2.7600e-003	6.9000e-004	1.0000e-005	7.0000e-004	0.0000	1.6674	1.6674	9.0000e-005	0.0000	1.6698
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.1300e-003	5.9100e-003	0.0618	1.8000e-004	0.0207	1.3000e-004	0.0209	5.5000e-003	1.2000e-004	5.6200e-003	0.0000	16.5775	16.5775	4.3000e-004	0.0000	16.5883
<b>Total</b>	<b>8.2600e-003</b>	<b>0.0108</b>	<b>0.0626</b>	<b>2.0000e-004</b>	<b>0.0235</b>	<b>1.4000e-004</b>	<b>0.0236</b>	<b>6.1900e-003</b>	<b>1.3000e-004</b>	<b>6.3200e-003</b>	<b>0.0000</b>	<b>18.2449</b>	<b>18.2449</b>	<b>5.2000e-004</b>	<b>0.0000</b>	<b>18.2580</b>

**4.0 Operational Detail - Mobile**



## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**4.1 Mitigation Measures Mobile**

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

**4.2 Trip Summary Information**

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

**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
General Light Industry	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

**4.4 Fleet Mix**

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.553113	0.036408	0.180286	0.116335	0.016165	0.005101	0.018218	0.063797	0.001357	0.001565	0.005903	0.000808	0.000944

Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

## 5.0 Energy Detail

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

[illegible]

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

## 5.2 Energy by Land Use - NaturalGas

### Unmitigated

[illegible]

**Mitigated**

[illegible]

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**5.3 Energy by Land Use - Electricity****Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**6.0 Area Detail****6.1 Mitigation Measures Area**

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0179	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1000e-004	1.1000e-004	0.0000	0.0000	1.2000e-004
Unmitigated	0.0179	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1000e-004	1.1000e-004	0.0000	0.0000	1.2000e-004

## 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	2.0300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0158					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1000e-004	1.1000e-004	0.0000	0.0000	1.2000e-004
<b>Total</b>	<b>0.0179</b>	<b>0.0000</b>	<b>6.0000e-005</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.1000e-004</b>	<b>1.1000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.2000e-004</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**6.2 Area by SubCategory****Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.0300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0158					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1000e-004	1.1000e-004	0.0000	0.0000	1.2000e-004
<b>Total</b>	<b>0.0179</b>	<b>0.0000</b>	<b>6.0000e-005</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.1000e-004</b>	<b>1.1000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.2000e-004</b>

**7.0 Water Detail****7.1 Mitigation Measures Water**

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

## 7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**7.2 Water by Land Use****Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**8.0 Waste Detail****8.1 Mitigation Measures Waste****Category/Year**

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000



## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**8.2 Waste by Land Use****Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**9.0 Operational Offroad**

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

## 10.0 Stationary Equipment

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### Fire Pumps and Emergency Generators

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

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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### User Defined Equipment

Equipment Type	Number
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## 11.0 Vegetation

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## Crestline Sanitation - San Bernardino-South Coast County, Annual

## Crestline Sanitation

### San Bernardino-South Coast County, Annual

## 1.0 Project Characteristics

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### 1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	0.00	1000sqft	0.00	0.00	0

### 1.2 Other Project Characteristics

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	32
<b>Climate Zone</b>	10			<b>Operational Year</b>	2022
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MW hr)</b>	702.44	<b>CH4 Intensity (lb/MW hr)</b>	0.029	<b>N2O Intensity (lb/MW hr)</b>	0.006

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase -

Off-road Equipment - Operations Only

Trips and VMT - Operations Only

On-road Fugitive Dust - Operations Only

Architectural Coating - Operations Only

Stationary Sources - Emergency Generators and Fire Pumps -

## Crestline Sanitation - San Bernardino-South Coast County, Annual

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	100.00	0.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	0.00
tblArchitecturalCoating	EF_Parking	100.00	0.00
tblArchitecturalCoating	EF_Residential_Exterior	50.00	0.00
tblArchitecturalCoating	EF_Residential_Interior	50.00	0.00
tblOffRoadEquipment	HorsePower	78.00	0.00
tblOffRoadEquipment	LoadFactor	0.48	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOnRoadDust	AverageVehicleWeight	2.40	0.00
tblOnRoadDust	HaulingPercentPave	100.00	0.00
tblOnRoadDust	MaterialMoistureContent	0.50	0.00
tblOnRoadDust	MaterialSiltContent	8.50	0.00
tblOnRoadDust	MeanVehicleSpeed	40.00	0.00
tblOnRoadDust	RoadSiltLoading	0.10	0.00
tblOnRoadDust	VendorPercentPave	100.00	0.00
tblOnRoadDust	WorkerPercentPave	100.00	0.00
tblStationaryGeneratorsPumpsEF	CH4_EF	0.07	0.07
tblStationaryGeneratorsPumpsEF	ROG_EF	2.2480e-003	2.2477e-003
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	80.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	0.55
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	200.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	0.00
tblTripsAndVMT	VendorTripLength	6.90	0.00
tblTripsAndVMT	WorkerTripLength	14.70	0.00

## Crestline Sanitation - San Bernardino-South Coast County, Annual

**2.0 Emissions Summary**

	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
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

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

**2.2 Overall Operational****Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	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
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	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
Stationary	0.0131	0.0428	0.0476	6.0000e-005		1.9300e-003	1.9300e-003		1.9300e-003	1.9300e-003	0.0000	6.0928	6.0928	8.5000e-004	0.0000	6.1141
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0131</b>	<b>0.0428</b>	<b>0.0476</b>	<b>6.0000e-005</b>	<b>0.0000</b>	<b>1.9300e-003</b>	<b>1.9300e-003</b>	<b>0.0000</b>	<b>1.9300e-003</b>	<b>1.9300e-003</b>	<b>0.0000</b>	<b>6.0928</b>	<b>6.0928</b>	<b>8.5000e-004</b>	<b>0.0000</b>	<b>6.1141</b>

## Crestline Sanitation - San Bernardino-South Coast County, Annual

**2.2 Overall Operational****Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	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
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	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
Stationary	0.0131	0.0428	0.0476	6.0000e-005		1.9300e-003	1.9300e-003		1.9300e-003	1.9300e-003	0.0000	6.0928	6.0928	8.5000e-004	0.0000	6.1141
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0131</b>	<b>0.0428</b>	<b>0.0476</b>	<b>6.0000e-005</b>	<b>0.0000</b>	<b>1.9300e-003</b>	<b>1.9300e-003</b>	<b>0.0000</b>	<b>1.9300e-003</b>	<b>1.9300e-003</b>	<b>0.0000</b>	<b>6.0928</b>	<b>6.0928</b>	<b>8.5000e-004</b>	<b>0.0000</b>	<b>6.1141</b>

	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
<b>Percent Reduction</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

**3.0 Construction Detail****Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Architectural Coating	Architectural Coating	1/1/2020	12/31/2019	5	0	

## Crestline Sanitation - San Bernardino-South Coast County, Annual

**Acres of Grading (Site Preparation Phase): 0****Acres of Grading (Grading Phase): 0****Acres of Paving: 0****Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)****OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	0	0.00	0	0.00

**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
Architectural Coating	0	0.00	0.00	0.00	0.00	0.00	0.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction****4.0 Operational Detail - Mobile**

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**4.1 Mitigation Measures Mobile**

## Crestline Sanitation - San Bernardino-South Coast County, Annual

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

## 4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

## 4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	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
General Office Building	16.60	8.40	6.90	33.00	48.00	19.00	77	19	4

## 4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Office Building	0.553113	0.036408	0.180286	0.116335	0.016165	0.005101	0.018218	0.063797	0.001357	0.001565	0.005903	0.000808	0.000944

## 5.0 Energy Detail

---

Historical Energy Use: N



## Crestline Sanitation - San Bernardino-South Coast County, Annual

## 5.1 Mitigation Measures Energy

[illegible]

## 5.2 Energy by Land Use - NaturalGas

### Unmitigated

[illegible]

## Crestline Sanitation - San Bernardino-South Coast County, Annual

**5.2 Energy by Land Use - NaturalGas****Mitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Office Building	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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**5.3 Energy by Land Use - Electricity****Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Office Building	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

## Crestline Sanitation - San Bernardino-South Coast County, Annual

### 5.3 Energy by Land Use - Electricity

**Mitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Office Building	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

## 6.0 Area Detail

## 6.1 Mitigation Measures Area

[illegible]

## Crestline Sanitation - San Bernardino-South Coast County, Annual

**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	0.0000					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
<b>Total</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**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	0.0000					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
<b>Total</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**7.0 Water Detail**

## Crestline Sanitation - San Bernardino-South Coast County, Annual

**7.1 Mitigation Measures Water**

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

**7.2 Water by Land Use****Unmitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	0 / 0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

## Crestline Sanitation - San Bernardino-South Coast County, Annual

**7.2 Water by Land Use****Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	0 / 0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**8.0 Waste Detail****8.1 Mitigation Measures Waste****Category/Year**

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

## Crestline Sanitation - San Bernardino-South Coast County, Annual

**8.2 Waste by Land Use****Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**9.0 Operational Offroad**

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

## Crestline Sanitation - San Bernardino-South Coast County, Annual

**10.0 Stationary Equipment****Fire Pumps and Emergency Generators**

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0.55	200	80	0.73	Diesel

**Boilers**

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

**User Defined Equipment**

Equipment Type	Number
----------------	--------

**10.1 Stationary Sources****Unmitigated/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
Equipment Type	tons/yr										MT/yr					
Emergency Generator - Diesel (75 - 100 HP)	0.0131	0.0428	0.0476	6.0000e-005		1.9300e-003	1.9300e-003		1.9300e-003	1.9300e-003	0.0000	6.0928	6.0928	8.5000e-004	0.0000	6.1141
<b>Total</b>	<b>0.0131</b>	<b>0.0428</b>	<b>0.0476</b>	<b>6.0000e-005</b>		<b>1.9300e-003</b>	<b>1.9300e-003</b>		<b>1.9300e-003</b>	<b>1.9300e-003</b>	<b>0.0000</b>	<b>6.0928</b>	<b>6.0928</b>	<b>8.5000e-004</b>	<b>0.0000</b>	<b>6.1141</b>

**11.0 Vegetation**



## **Appendix B**

### **Biological Resources Report**

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47 1st Street, Suite 1  
Redlands, CA 92373-4601  
(909) 915-5900

June 30, 2019

Rick Dever  
Crestline Sanitation District  
24516 Lake Drive  
Crestline, CA 92325

RE: BIOLOGICAL RESOURCES ASSESSMENT & JURISDICTIONAL DELINEATION  
CRESTLINE SANITATION DISTRICT  
HUSTON CREEK WASTEWATER TREATMENT PLANT DEWATERING BUILDING  
AND PRIMARY CLARIFIER PROJECT

Dear Mr. Dever:

Jericho Systems, Inc. (Jericho) is pleased to provide Crestline Sanitation District (District) with this 2019 biological resources assessment (BRA) and jurisdictional delineation (JD) for proposed Huston Creek Wastewater Treatment Plant Primary Clarifier and Dewatering Building Project (Project) located in the unincorporated area of Crestline, California. The Crestline Sanitation District is proposing to obtain a low-interest loan through the State Water Resources Control Board (SWRCB) State Revolving Fund (SRF) Loan Program, which is partially funded by the US EPA. As such, this report addresses both State and Federal requirements in accordance with a process termed as CEQA-Plus (California Environmental Quality Act (CEQA)).

This report addresses potential project-related effects to designated Critical Habitats and/or any species currently listed or formally proposed for listing as endangered or threatened under the federal Endangered Species Act (ESA) and the California Endangered Species Act (CESA), or species designated as sensitive by the California Department of Fish and Wildlife (CDFW), or the California Native Plant Society (CNPS). Attention was focused on sensitive biological resources known to occur locally (within a 3-mile radius of the Project area boundaries). Further, Jericho assessed the Project site for any State and /or federal jurisdictional waters that are subject to Sections 404 and 401 of the federal Clean Water Act (CWA) regulated by the U.S. Army Corps of Engineers (USACE) and Regional Water Quality Control Board (RWQCB) respectively; and/or Section 1602 of the California Fish and Game Code (FCG) administered by the CDFW. This report also addresses resources protected under the Coastal Barriers Resources Act, Coastal Zone Management Act, Magnuson-Stevens Fishery Conservation and Management Act, the Protection of Wetlands – Executive Order 11990, Migratory Bird Treaty Act and Wild and Scenic Rivers Act.

## PROJECT DESCRIPTION

The District is proposing to upgrade its existing wastewater treatment plant by adding a primary clarifier, backup generator, trickling filter recirculation pumps, and a sludge dewatering building with associated sludge dewatering and conveyance equipment (proposed Project). Construction is estimated to occur in approximately 2020 and last approximately 24 months. The existing facilities in the proposed project area were constructed in 1952 (e.g. primary clarifiers) and 1984 (e.g. sludge handling facility). These

facilities are reaching the end of their serviceable life and are not designed to meet current engineering standards and community wastewater treatment demands.

The new primary clarifier is proposed to be approximately 38 feet in diameter and approximately 15 feet deep. This will provide redundancy for the two existing clarifiers which are each approximately 26 feet in diameter and approximately 8 feet deep. The new primary clarifier will act as the primary wastewater clarifier, designed to process the existing capacity of the two existing clarifiers, and the existing clarifiers will serve as redundancy. The two existing clarifiers have a design capacity of approximately 0.7 million gallons/day (MG/day) but process approximately 0.350 mg/day, and the new one is designed process the same quantity, approximately 0.7 MG/day.

The new dewatering building will be a two-story building. It is estimated to be approximately 34 feet wide by 51 feet long by 30 feet tall. An approximately 23-foot square by 15-foot-high reinforced concrete thickened sludge holding tank with mixing and aeration system will be constructed adjacent to the new dewatering building. Equipment in the building will include:

- Two (2) thickened sludge pumps,
- Polymer storage and dosing system,
- Two (2) dewatering screw presses with motors,
- Dewatered cake conveyor system consisting of approximately three (3) conveyors, and
- Two (2) filtrate pumps.

The existing plant sits on a knoll of a slope. Site work will include expanding the facility within the existing developed plant grounds or within the adjacent property owned by the District. Site work includes constructing the new dewatering building within the grassy area adjacent to the existing dewatering building on the northwest side. Additional site work may include filling a portion of the existing slope on the southeast side, adjacent to the driveway nearest the existing clarifiers, to slightly widen the driveway to accommodate placement of the new clarifier. Disinfected secondary effluent from these plants is discharged to a single outfall pipeline which conveys all of the treated wastewater to the Las Flores Ranch area, north of Silverwood Lake. The District is currently regulated by the Lahontan Regional Water Quality Control Board (RWQCB) Waste Discharge Requirements (WDR), Board Order 6-94-57 and Las Flores Ranch WDR, Board Order 6-96-24 for effluent discharged at the Las Flores Ranch area. Post-Project operations will not change this discharge location or amount of effluent.

## PROJECT LOCATION

The Project site is located in the unincorporated San Bernardino County mountain community of Crestline. Improvements will occur within the grounds of the existing Huston Creek Wastewater Treatment Plant, which is situated approximately 2,700 feet north of the Crestline Sanitation office, located at 24516 Lake Drive, Crestline, CA 92325 (Figure 1 and 2). The Project site can be found on *Silverwood Lake* USGS 7.5' quadrangle, Township 2 North, Range 4 West, Section 14 at approximately latitude 34.25424, longitude -117.27056. There is no commercial or residential development adjacent to the project. The closest residences are approximately 1,000 feet to the southwest along Zermatt Drive, and approximately 1,700 feet to the east at the end of Orchard Road.

## METHODS

Prior to conducting the field study, species and habitat information was gathered from the reports related to the specific project and relevant databases for the *Silverwood Lake* and *Lake Arrowhead* USGS quadrangles. While the project is in proximity to the *San Bernardino North* and *Harrison Mountain*

quads, these quads contain primarily lowland species and would not be representative of the upland habitats found at the project site and were excluded from the database queries. The purpose of the database searches was to determine which species and/or habitats would be expected to occur on site. These sources include:

- U.S. Fish and Wildlife (USFWS) threatened and endangered species occurrence GIS overlay;
- USFWS Information for Planning and Consultation System (IPaC);
- California Natural Diversity Database (CNDDDB) *Rarefind 5*;
- CNDDDB Biogeographic Information and Observation System (BIOS);
- California Native Plant Society Electronic Inventory (CNPSEI) database;
- Calflora Database;
- USDA Natural Resources Conservation Service (NRCS) Web Soil Survey;
- USFWS National Wetland Inventory;
- Environmental Protection Agency (EPA) Water Program “My Waters” data layers

On June 20, 2019, Jericho Biologist Christian Nordal conducted a field survey of the Project area with focus on potential habitat for sensitive biological and hydrological resources and migratory birds. Mr. Nordal is a qualified biologist with advanced degrees in Biology and several years of experience surveying for the sensitive species known in California. Mr. Nordal conducted the survey by walking transects spaced approximately 30 feet apart, which provided 100 percent visual coverage of the ground. Weather conditions were sunny with little cloud cover and good visibility. Survey hours spanned from 11:00 p.m. to 2:30 p.m. with temperatures ranging from 70 degrees Fahrenheit (° F) to 72° F and winds ranging from 4-6 mph. The survey encompassed the Project site boundaries plus a 150-foot survey buffer where accessible and appropriate. Wildlife species were detected during field surveys by sight, calls, tracks, scat, or other signs. In addition to species observed, expected wildlife usage of the site was determined according to known habitat preferences of regional wildlife species and knowledge of their relative distributions in the area. Mr. Nordal assessed the Project area for habitat type structure, species composition/association, condition and human disturbances.

In regard to jurisdictional waters, Mr. Nordal looked for indicators of active surface flow and corresponding physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris. Suspected jurisdictional areas were checked for the presence of definable channels, soils, and hydrology. Evaluation of potential federal jurisdiction followed the regulations set forth in 33CFR part 328 and the USACE guidance documents and evaluation of potential State jurisdiction followed guidance in the Fish and Game Code and A Review of Stream Processes and Forms in Dryland Watersheds (CDFW, 2010).

## RESULTS

### *Database results*

According to the U.S. EPA Regional map, the Project site is located in the Southern California Mountains Ecoregion. An Ecoregion is a regional area that has similar ecosystems in terms of type, quality, and quantity of environmental resources. The Southern California Mountains Ecoregion consists of several coastal mountain ranges. From northwest to southeast, these are the Santa Ynez Mountains, the Tehachapi Mountains, the San Gabriel Mountains, the San Bernardino Mountains, the San Jacinto Mountains, and the Santa Rosa Mountains. These mountain ranges consist primarily of Mesozoic granitic and metamorphic rocks and Tertiary sedimentary rocks. The mountains are broken up and not continuous as a result of movement on the San Andreas Fault and associated thrust faults. The Southern California Mountains Ecoregion acts as a barrier between the coastal Mediterranean climate and the inland dry desert climate.

Hydrologically, the project site is located within the Upper Mojave Hydrologic Area (HUC 180902080201), which occurs within the West Fork Mojave River watershed. Soils in this area consist of Wapi-Pacifico families- Rock outcrop complex, 50-75 percent slopes and Morical-Wind River families complex, 30-50 percent slopes at an elevation of 4406-4506 ft. above sea level.

The wildlife database queries listed 58 sensitive species (18 vertebrates, 5 invertebrates, and 35 plant species) and 1 sensitive habitat in the *Silverwood Lake* and *Lake Arrowhead* USGS quadrangles. Table 1 in Attachment C represents a compiled list of sensitive species documented within these quads and takes into account each species range, habitat requirements and the potential for their occurrence on the site, which is based on required habitat elements and range relative to the current site conditions as well as the field investigation of the Project area and surveyor's knowledge of the species and local ecology.

Of the State- and/or federally-listed species documented within the *Silverwood* and *Lake Arrowhead*, quads, the following four have been documented in the project vicinity (within approximately 3 miles) of the Project site:

- Southern rubber boa (*Charina umbratica*)
- Bald eagle (*Haliaeetus leucocephalus*)
- Arroyo toad (*Anaxyrus californicus*)
- Southern mountain yellow-legged frog (*Rana draytonii*)

Although not State- or federally-listed species, California spotted owl (*Strix o. occidentalis*) and San Bernardino flying squirrel (*Glaucomys sabrinus californicus*) are CDFW SSC and are considered particularly sensitive species within the region. Furthermore, these species have been documented within a few miles of the project site. Therefore, California spotted owl and San Bernardino flying squirrel will be included in the discussion below.

Because arroyo toad and southern mountain yellow-legged frog habitat do not exist within one mile of the site, nor are they on the site, and Project improvements will not impact these species either directly or indirectly, these species are not included in the discussion below.

#### *Survey results*

All vegetation within existing fence line consists of lawn grass maintained by landscaping with scattered annuals along the edges. Conceptual design includes the potential for development outside of existing fence line will occur along an approximately 60-foot stretch of the adjacent slope. The slope planned for development is dominated by annuals; these annuals had already died and dried out by the time of the survey. Annual plant identification is typically performed between the months of May and July in the mountains. No sensitive annual plants are document in the immediate vicinity of the waster-water treatment plant and none are expected to occur. All other disturbance to vegetation will be limited to trimming branches overhanging the fence line; these species include California black oak (*Quercus kelloggii*) and yellow pine (*Pinus ponderosa*).

Wildlife observed within the existing treatment plant included house sparrow (*Passer domesticus*), lesser goldfinch (*Spinus psaltria*), black phoebe (*Sayornis nigricans*), and house finch (*Haemorhous mexicanus*).

No State- and/or federally-listed threatened or endangered species, or other sensitive species were observed on site during the field survey.

### ***Southern rubber boa – Threatened (State)***

The State-listed as threatened southern rubber boa (rubber boa) is a small, rather stout-bodied snake with smooth scales and a blunt head and tail. Rubber boas are primarily fossorial and are rarely encountered on the surface, except on days and nights of high humidity and overcast sky. During warm months, it is active at night and on overcast days. It hibernates during winter, usually in crevices in rocky outcrops. Other potential hibernacula may be rotting stumps. Typical habitat for this species is mixed conifer-oak forest or woodland dominated by two or more of the following species: Jeffrey pine (*Pinus jeffreyi*), yellow pine (*P. ponderosa*), sugar pine (*P. lambertiana*), incense cedar (*Calocedrus decurrens*), white fir (*Abies concolor*), and black oak (*Quercus kelloggii*). Rubber boas are usually found near streams or wet meadows or within or under surface objects with good moisture retaining properties such as rotting logs (CDFW 2014).

Rubber boa have been documented within one mile of the project site in Sky forest as well as within Little Bear Creek and Dogwood Creek. The Little Bear Creek and Dogwood Creek occurrences likely represent movement corridors for this species. In addition to the Little Bear Creek and Dogwood Creek occurrences, there are 90 rubber boa occurrences documented within approximately 5 miles of the subject parcel (CDFW pers. comm.). The project vicinity does not provide habitat suitable to support rubber boa; however, adjacent habitat is potentially suitable. There is low potential for southern rubber boa to occur within the Project site, as it is an existing waste water treatment plant. Should the area of impact extend beyond the existing fence line, measures to avoid southern rubber boa may be warranted, such as a pre-construction survey.

### ***Bald eagle – Delisted (Federal)/ Endangered (State)***

The bald eagle (BAEA) was a federally-listed species until 2007 when it was delisted because of the increase in population. However, it remains a State-listed endangered species and is covered under the Migratory Bird Treaty Act (MBTA). BAEA are distinguished by a white head and white tail feathers, are powerful, brown birds that may weigh 14 pounds and have a wingspan of 8 feet. Male eagles are smaller, weighing as much as 10 pounds and have a wingspan of 6 feet. Sometimes confused with Golden Eagles, BAEA are mostly dark brown until they are four to five years old and acquire their characteristic coloring. They live near rivers, lakes, and marshes where they can find fish, their staple food. BAEA will also feed on waterfowl, turtles, rabbits, snakes, and other small animals and carrion. BAEA require a good food base, perching areas, and nesting sites. Their habitat includes estuaries, large lakes, reservoirs, rivers, and some seacoasts (CDFW 2016). In winter, the birds congregate near open water in tall trees for spotting prey and night roosts for sheltering (CDFW 1999). They mate for life, choosing the tops of large trees to build nests, which they typically use and enlarge each year. In most of California, the breeding season lasts from about January through July or August (CDFW 2016). Nests may reach 10 feet across and weigh a half ton. They may also have one or more alternate nests within their breeding territory (CDFW 2016). The young eagles are flying within three months and are on their own about a month later.

The U.S. Forest Service conducts annual surveys for BAEA in the San Bernardino Mountains. Migrating BAEA have long been documented to overwinter in the San Bernardino Mountains, including at nearby Lake Arrowhead. The wintering period for migrating BAEA in the San Bernardino Mountains is generally December through March, with the first eagles arriving in mid-November and the last eagles leaving in early April. The highest numbers of wintering eagles in the area is in January and early February.

The project is not within or adjacent any suitable BAEA foraging or nesting habitat. The nearest recorded occurrence for this species is east of Tunnel Ridge, which is approximately 1.3 miles northeast of the project site. Therefore, the proposed project is not likely to impact BAEA and no further investigation relative to this species is warranted or required.

### ***California spotted owl – SSC***

The California spotted owl (SPOW) is considered a SSC by the CDFW and is listed as a Sensitive Species by the U.S. Forest Service. The SPOW breeds and roosts in forests and woodlands with large old trees and snags, high basal areas of trees and snags, dense canopies ( $\geq 70\%$  canopy closure), multiple canopy layers, and downed woody debris. Large, old trees are the key component; they provide nest sites and cover from inclement weather and add structure to the forest canopy and woody debris to the forest floor. These characteristics typify old-growth or late-seral-stage habitats. Because the SPOW selects stands that have higher structural diversity and significantly more large trees than those generally available, it is considered a habitat specialist. In southern California, SPOW principally occupy montane hardwood and montane hard-wood-conifer forests, especially those with canyon live oak (*Quercus chrysolepis*) and bigcone Douglas-fir (*Pseudotsuga macrocarpa*), at mid- to high elevations (Davis and Gould 2008).

SPOW prey on small mammals, particularly dusky-footed woodrats (*Neotoma fuscipes*) at lower elevations (oak woodlands and riparian forests) and throughout southern California. The SPOW breeding season occurs from early spring to late summer or fall. Breeding spotted owls begin pre-laying behaviors, such as preening and roosting together, in February or March and juvenile owl dispersal likely occurs in September and October (Meyer 2007). The SPOW does not build its own nest but depends on finding suitable, naturally occurring sites in tree cavities or on broken-topped trees or snags, on abandoned raptor or common raven (*Corvus corax*) nests, squirrel nests, dwarf mistletoe (*Arceuthobium* spp.) brooms, or debris accumulations in trees. In the San Bernardino Mountains, platform nests predominate (59%) and were in trees with an average diameter at breast height (dbh) of 75 cm, whereas cavity nest trees and broken-top nest trees were significantly larger (mean dbh of 108.3 cm and 122.3 cm, respectively) (LaHaye et al. 1997, as cited in Davis and Gould 2008).

According to LaHaye and Gutierrez (2005), urbanization in the form of primary and vacation homes has degraded or consumed some forest in most mountain ranges. The results of spotted owl surveys conducted between 1987 and 1998 in the San Bernardino Mountains indicated that a large area of potentially-suitable spotted owl habitat, enough to support 10-15 pairs, existed between Running Springs and Crestline (LaHaye and others 1999, as cited in LaHaye and Gutierrez 2005). However, only four pairs have been found in this area, and owls were found only in undeveloped sites. Thus, residential development within montane forests may preclude spotted owl occupancy, even when closed-canopy forest remains on developed sites (LaHaye and Gutierrez 2005).

Per the CNDDDB Spotted Owl Observations Database (2019), the nearest documented SPOW activity center (roosting or nesting site) is approximately 0.1 mile northeast of the project site. Some of the area surrounding the project site does provide habitat suitable to support SPOW. However, the project site is within an area subject to ongoing human disturbances associated with the existing wastewater treatment plant in the area for a long time. Therefore, it is unlikely that the project site and immediate surrounding area would be utilized by SPOW for nesting or roosting, even though the basic habitat requirements for this species are present within the project area. Furthermore, this species has not been documented within the project area. Although the U.S. Forest Service does not survey for SPOW on private property, the surrounding San Bernardino National Forest areas have been surveyed extensively by the Forest Service



since the late 1980s. For the reasons discussed, the project area is most likely not occupied by SPOW and the proposed project is not likely to impact this species.

However, although the habitat within the project area is not likely to support SPOW, preconstruction Nesting Bird Surveys (NBS) should be conducted prior to the commencement of any project activities that may occur within the nesting bird season (typically February – September), to avoid any potential project-related impacts to SPOW as well as any other potential nesting birds within the project area.

### ***San Bernardino flying squirrel – SSC***

The San Bernardino flying squirrel (flying squirrel) is considered a SSC by the CDFW and is listed as a Sensitive Species by the U.S. Forest Service. The flying squirrel is a nocturnally active, arboreal squirrel that is distinguished by the furred membranes extending from wrist to ankle that allow squirrels to glide through the air between trees at distances up to 91 meters (300 feet) (Wolf 2010). The San Bernardino flying squirrel is the most southerly distributed subspecies of northern flying squirrel (*Glaucomys sabrinus*). It inhabits high-elevation mixed conifer forests comprised of white fir, Jeffrey pine, and black oak between ~4,000 to 8,500 feet. It has specific habitat requirements that include associations with mature forests, large trees and snags, closed canopy, downed woody debris, and riparian areas, and it is sensitive to habitat fragmentation.

The Flying Squirrels of Southern California is a project of the San Diego Natural History Museum (SDNHM), in collaboration with the U.S. Forest Service and the USFWS, to try to determine the distribution and habitat use of the flying squirrel in southern California. Per the SDNHM database, the nearest documented flying squirrel occurrence (2015) is approximately 0.7 miles northeast of the project site, within a residential neighborhood.

The surrounding area does provide habitat suitable to support flying squirrel. The habitat consists of mixed conifer-oak forest with large trees and snags, downed woody debris, and adjacent riparian habitat. Furthermore, this species has been documented within approximately 0.7 mile of the project site, in similar mixed conifer-oak forest habitat. Therefore, the habitat in the surrounding vicinity is suitable to support flying squirrel and the proposed Project could potentially result in indirect noise impacts to this species. However, the existing facility has been in existence for several decades, and most of the improvements will occur within the existing fence line. Therefore, potential direct impacts to flying squirrel that may potentially result from the project are not likely.

### ***Nesting Birds***

Vegetation suitable for nesting birds does exist adjacent to the Project area. Bird nesting season generally extends in southern California from March 1 through September 1 for migratory birds. To avoid impacts to nesting birds (common and special status) during the nesting season, a qualified Avian Biologist should conduct pre-construction Nesting Bird Surveys prior to project-related disturbance to nestable vegetation to identify any active nests. If no active nests are found, no further action will be required. If an active nest is found, the biologist would set appropriate no-work buffers around the nest based upon the nesting species, its sensitivity to disturbance, nesting stage and expected types, intensity and duration of disturbance. The nests and buffer zones would field checked as appropriate by the biologist. The no-work buffer zone would remain until the biologist has determined the young birds have successfully fledged and the nest is inactive.

### ***Jurisdiction Waters***

All water on site is contained within the treatment facility. The site is landscaped, and no signs of surface flow, banks, beds, or channels are evident throughout the project vicinity. No hydric vegetation, hydric soils, and/or wetland hydrology are present in any segment of the Project site.

## **EFFECTS ANALYSIS**

### ***Federal Endangered Species Act (ESA)***

The USFWS administers the federal ESA of 1973. The ESA provides a legal mechanism for listing species as either threatened or endangered, and a process of protection for those species listed. Section 9 of the ESA prohibits "take" of threatened or endangered species. The term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in such conduct. "Take" can include adverse modification of habitats used by a threatened or endangered species during any portion of its life history. Under the regulations of the ESA, the USFWS may authorize "take" when it is incidental to, but not the purpose of, an otherwise lawful act. Take authorization can be obtained under Section 7 or Section 10 of the act.

No federally listed species were observed during the field survey nor are any expected to occur. No impact to federally protected species or habitats will result from implementation of the proposed Project.

### ***California Endangered Species Act (CESA)***

The CDFW administers the State CESA. The State of California considers an endangered species one whose prospects of survival and reproduction are in immediate jeopardy. A threatened species is one present in such small numbers throughout its range that it is likely to become an endangered species soon, in the absence of special protection or management. And a rare species is one present in such small numbers throughout its range that it may become endangered if its present environment worsens. Rare species applies to California native plants. Further, all raptors and their nests are protected under Section 3503.5 of the California Fish and Game Code (FGC). Species of Special Concern (SSC) is an informal designation used by CDFW for some declining wildlife species that are not proposed for listing as threatened or endangered. This designation does not provide legal protection but signifies that these species are recognized as sensitive by CDFW.

No State listed species, or other sensitive species were observed during the field survey nor are any expected to occur. No impact to species protected by the State will result from implementation of the proposed Project.

### ***Coastal Barriers Resources Act Resources***

The Coastal Barrier Resources Act (CBRA) was passed by Congress in 1982 to encourage conservation of hurricane-prone, biologically rich coastal barriers. CBRA prohibits most new federal expenditures that encourage development or modification of coastal barriers. CBRS boundaries are shown on maps that were originally adopted by Congress and are maintained by the USFWS. Currently, the coastal barrier resource systems are located along the Atlantic and Gulf Coasts of the United States and the shore areas of the Great Lakes. Therefore, the Project is not located in a Coastal Barriers Resources Act area.

### ***Coastal Zone Management Act Resources***

Coastal Zone Management Act was passed by Congress in 1972 and is administered by National Oceanic and Atmospheric Administration, (NOAA). It provides for the management of the nation's coastal resources, including the Great Lakes. The goal is to "preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone."

The Project is not located in a Coastal Zone that where the provisions of this Act would be applicable.

### ***Magnuson-Stevens Fishery Conservation and Management Act***

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) is the primary law governing marine fisheries management in U.S. federal waters. First passed in 1976, the Magnuson-Stevens Act fosters long-term biological and economic sustainability of our nation's marine fisheries out to 200 nautical miles from shore. The goals of the act include: prevent overfishing; rebuild overfished stocks; increase long-term economic and social benefits; use reliable data and sound science; conserve essential fish habitat; ensure a safe and sustainable supply of seafood.

The Project is not located 200 nautical miles from shore, nor does it impact any essential fish habitat that would impact regulated areas 200 nautical miles from shore.

### ***Protection of Wetlands – Executive Order 11990***

Protection of Wetlands – Executive Order 11990: The purpose of Executive Order (EO) 11990 is to "minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands". To meet these objectives, the Order requires federal agencies, in planning their actions, to consider alternatives to wetland sites and limit potential damage if an activity affecting a wetland cannot be avoided. The procedures require the determination of whether or not the proposed project will be in or will affect wetlands. If so, a wetlands assessment must be prepared that describes the alternatives considered. The procedures include a requirement for public review of assessments. The evaluation process follows the same 8 steps as for EO 11988, Floodplain Management.

Wetlands are the at transition between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. In general, wetlands have one or more of the following three attributes: 1) at least periodically, the land supports predominantly hydrophytes; 2) soils are hydric meaning undrained; and 3) the substrate is saturated with water or covered by shallow water at some time during the growing season of each year. Under current guidelines, a jurisdictional wetland under the CWA's Section 404, must display all three wetland characteristics: hydrophytic vegetation, hydric soils, and wetland hydrology. In California however, a jurisdictional wetland needs to meet only one of these parameters.

No drainages or indications of wetlands, hydric soils, naturally occurring indicator plant species were observed during the field survey nor are any expected to occur. There are no jurisdictional wetlands within or immediately adjacent to any of the Project components identified in the Project description. No impact to protected wetland areas will result from implementation of the proposed Project.

### ***Migratory Bird Treaty Act (MBTA)***

The federal Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C 703-711) provides protection for nesting birds that are both residents and migrants whether or not they are considered sensitive by resource

agencies. The MBTA prohibits take of nearly all native birds. The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed under 50 CFR 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). The direct injury or death of a migratory bird, due to construction activities or other construction-related disturbance that causes nest abandonment, nestling abandonment, or forced fledging would be considered take under federal law. The USFWS, in coordination with the CDFW administers the MBTA. CDFW's authoritative nexus to MBTA is provided in FGC Sections 3503.5 which protects all birds of prey and their nests and FGC Section 3800 which protects all non-game birds that occur naturally in the State. Vegetation suitable for nesting birds does exist adjacent to the Project area. As discussed, most birds are protected by the MBTA. In general, impacts to all bird species (common and special status) can be avoided by conducting work outside of the nesting season, which is generally January/February to August/September, and by conducting a worker environmental awareness training. However, if all work cannot be conducted outside of nesting season, a Project-specific Nesting Bird Management Plan can be prepared to determine suitable buffers.

Bird nesting season generally extends in southern California from March 1 through September 1 for migratory birds. To avoid impacts to nesting birds (common and special status) during the nesting season, a qualified Avian Biologist will conduct pre-construction Nesting Bird Surveys (NBS) prior to project-related disturbance to nestable vegetation to identify any active nests. If no active nests are found, no further action will be required. If an active nest is found, the biologist will set appropriate no-work buffers around the nest which will be based upon the nesting species, its sensitivity to disturbance, nesting stage and expected types, intensity and duration of disturbance. The nests and buffer zones shall be field checked as appropriate by the biologist. The no-work buffer zone shall be clearly marked in the field, within which no disturbance activity shall commence until the biologist has determined the young birds have successfully fledged and the nest is inactive.

### ***Wild and Scenic Rivers Act.***

Wild and Scenic Rivers Act. The National Wild and Scenic Rivers System was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. 1271 et seq.) to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. The Act is notable for safeguarding the special character of these rivers, while also recognizing the potential for their appropriate use and development. It encourages river management that crosses political boundaries and promotes public participation in developing goals for river protection. Rivers may be designated either a federal or state agency. As of 2019, there were 22 water body sections have a wild and scenic river designation in California.

The Project is not located within a water body that is designated by the Wild and Scenic Rivers Act.

## **CONCLUSIONS**

The proposed Project will not affect State or federally listed endangered, threatened species because there is no habitat to support these species within, adjacent to, or in the broader vicinity of the Project area. In addition, the proposed Project will not adversely affect Critical Habitat as none exists within the Project area.

Vegetation bordering and within the Project area has the potential to support nesting birds and migratory birds protected under the MBTA. Therefore, pre-construction surveys are warranted and recommended should project implementation occur during the bird nesting season.

Should you have any questions or require further information, please contact me at (909) 915-5900 or [shay@jericho-systems.com](mailto:shay@jericho-systems.com) should you have any questions or require further information.

Sincerely,

A handwritten signature in black ink, appearing to read "Shay Lawrey", is positioned above the typed name.

Shay Lawrey, President

Attachments:

- A. Photos*
- B. Project Exhibits*
- C. Species Occurrence Potential*



Photo 1: Northeast-facing photo at the facility entrance, facing into the facility. Slope that may be developed visible on the right.



Photo 2: Slope that may be developed for access road. Area of potential slope disturbance will not extend to existing trees.



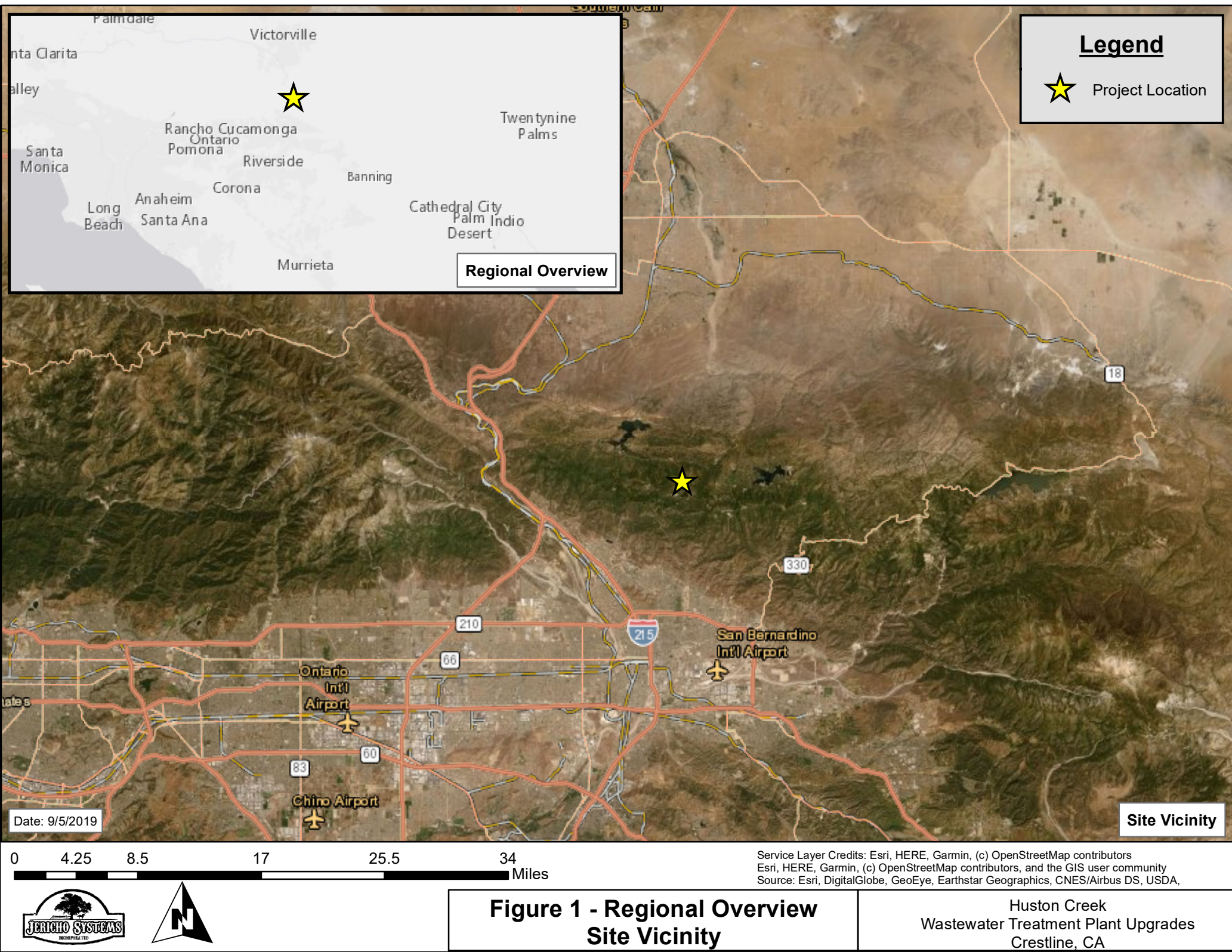


Photo 3: Existing lawn grass on the northern front of the facility to be removed for new sludge building.

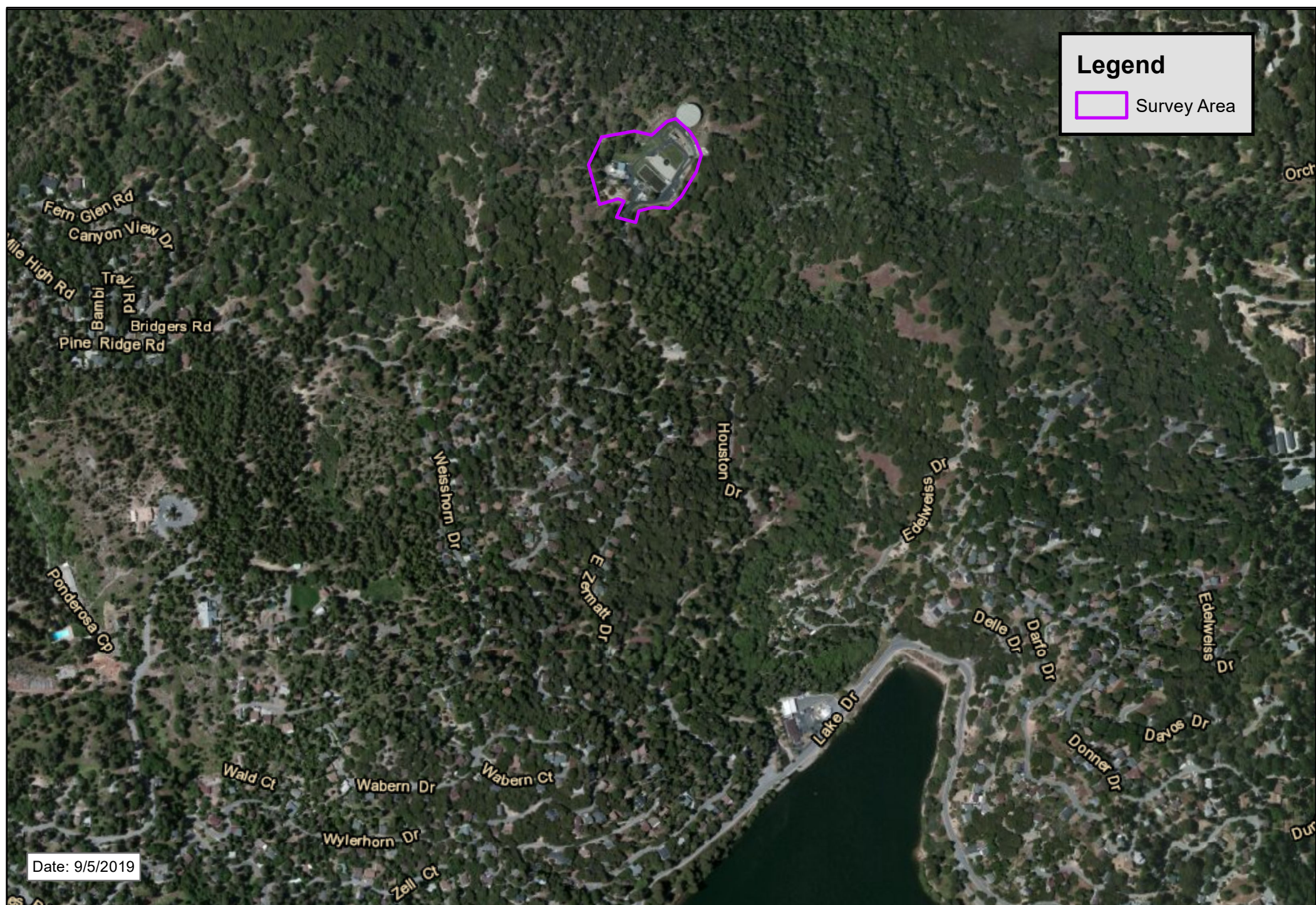


Photo 4: Existing lawn grass and ruderal vegetation in the center of the facility for new sludge building.










**Legend**

 Survey Area

Date: 9/5/2019

0 0.05 0.1 0.2 0.3 0.4  
Miles

Imagery Date: 8/6/2017

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors  
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,

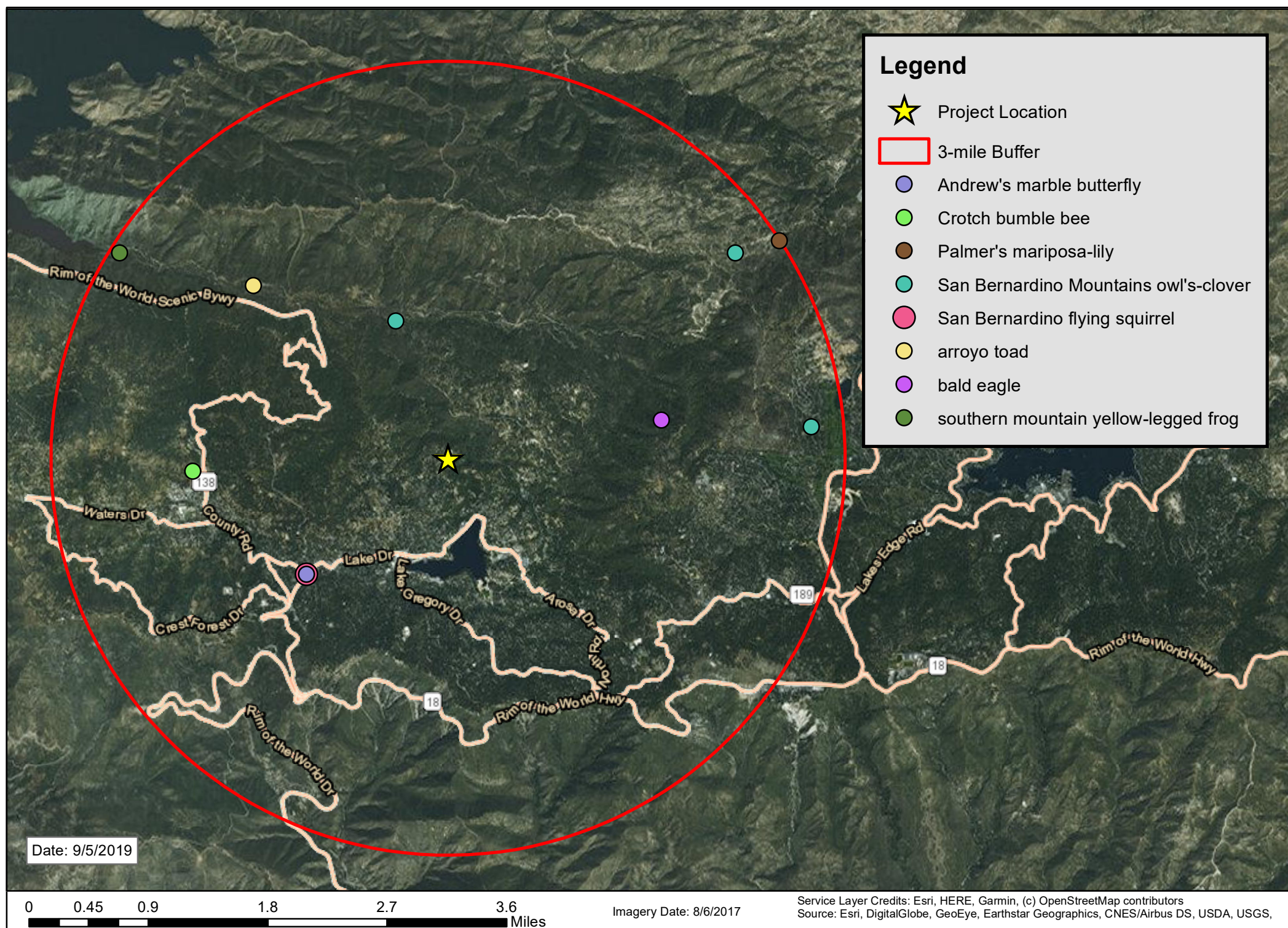


1 inch = 583 feet

**Figure 2**  
**Site Location**

Huston Creek  
Wastewater Treatment Plant Upgrades  
Crestline, CA





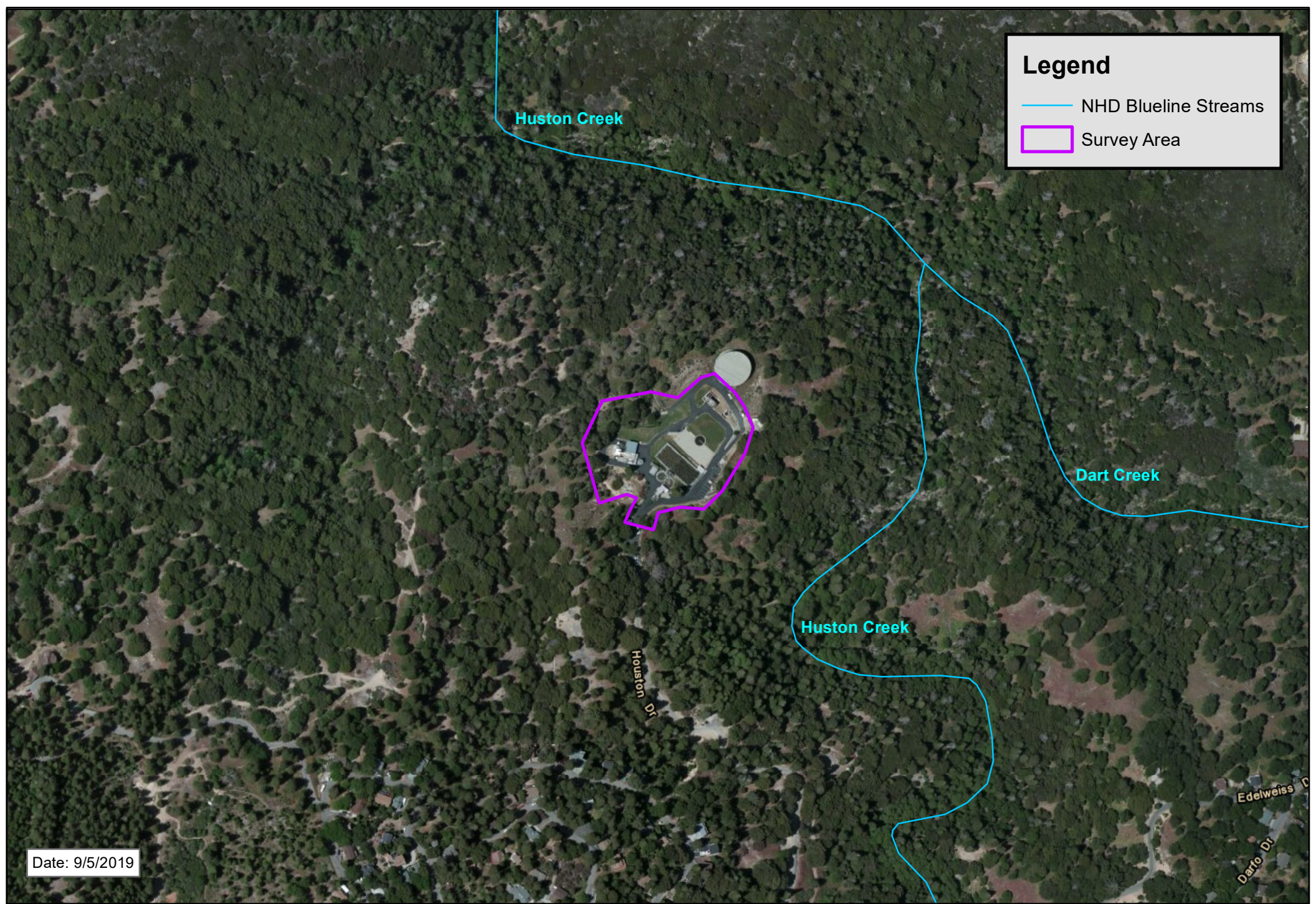
**Figure 3**  
**CNDDDB 3-mile Occurences**

Huston Creek  
Wastewater Treatment Plant Upgrades  
Crestline, CA



1 inch = 4,697 feet





**Legend**

NHD Blueline Streams

Survey Area

Date: 9/5/2019

0 0.035 0.07 0.14 0.21 0.28 Miles

Imagery Date: 8/6/2017

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors  
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,

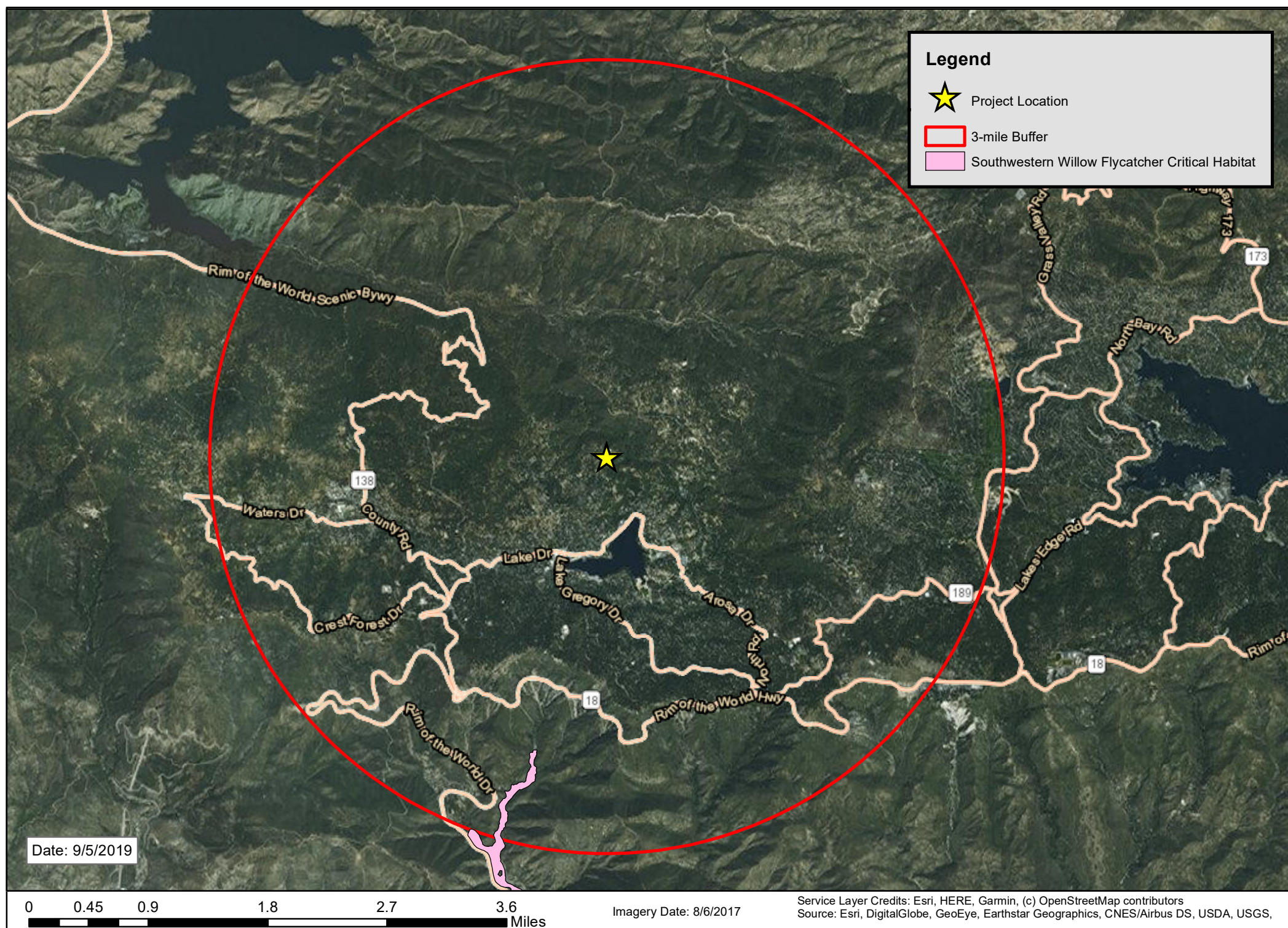


1 inch = 383 feet

**Figure 4**  
**NHD Blueline Streams**

Huston Creek  
Wastewater Treatment Plant Upgrades  
Crestline, CA






1 inch = 4,697 feet

**Figure 5**  
**USFWS Designated Critical Habitat**

Huston Creek  
Wastewater Treatment Plant Upgrades  
Crestline, CA




## Legend

 Survey Area

## Soils

 Wapi-Pacifico families- Rock outcrop complex, 50-75 percent slopes

 Morical-Wind River families complex, 30-50 percent slopes

Date: 9/6/2019

0 0.0075 0.015 0.03 0.045 0.06 Miles

Imagery Date: 8/6/2017

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors  
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,



1 inch = 83 feet

**Figure 6**  
**Soils**

Huston Creek  
Wastewater Treatment Plant Upgrades  
Crestline, CA

**Table 1.**  
**Sensitive Species Occurrence Potential in Project Area**

Scientific Name	Common Name	Federal Listing State Listing Other Statuses	Habitats	Potential To Occur
<b>Birds</b>				
<i>Haliaeetus leucocephalus</i>	bald eagle	Delisted Endangered BLM Sensitive   CDF Sensitive   CDFW Fully Protected   IUCN Least Concern   USFS Sensitive   USFWS Birds of Conservation Concern	Ocean shore, lake margins, and rivers for both nesting and wintering. Most nests within 1 mile of water. Nests in large, old-growth, or dominant live tree with open branches, especially ponderosa pine. Roosts communally in winter.	While there is water within 1 mile (Huston Creek), disturbance limits are confined to existing fence line and trees to be trimmed do not have active nests. Potential to occur within disturbance limits is low.
<i>Pandion haliaetus</i>	osprey	None None CDF Sensitive   CDFW Watch List   IUCN Least Concern	Ocean shore, bays, freshwater lakes, and larger streams. Large nests built in tree-tops within 15 miles of a good fish-producing body of water.	While there is water within 1 mile (Huston Creek), disturbance limits are confined to existing fence line and trees to be trimmed do not have active nests. Potential to occur within disturbance limits is low.
<i>Setophaga petechia</i>	yellow warbler	None None CDFW SSC   USFWS Birds of Conservation Concern	Riparian plant associations in close proximity to water. Also nests in montane shrubbery in open conifer forests in Cascades and Sierra Nevada. Frequently found nesting and foraging in willow shrubs and thickets, and in other riparian plants including cottonwoods, sycamores, ash, and alders.	Riparian habitat or mountain shrub communities are not on site. Potential to occur within disturbance limits is low.
<i>Gymnogyps californianus</i>	California condor	Endangered Endangered CDF Sensitive   CDFW Fully Protected   IUCN Critically Endangered   NABCI Red Watch List	Require vast expanses of open savannah, grasslands, and foothill chaparral in mountain ranges of moderate altitude. Deep canyons containing clefts in the rocky walls	Habitat on site does not contain vast expanses of any of the condor's habitat requirements. Potential to occur within disturbance limits is low.

Scientific Name	Common Name	Federal Listing State Listing Other Statuses	Habitats	Potential To Occur
			provide nesting sites. Forages up to 100 miles from roost/nest.	
<i>Empidonax traillii extimus</i>	southwestern willow flycatcher	Endangered Endangered NABCI Red Watch List	Riparian woodlands of Southern California, requires slow-moving waters with multiple canopy layers	Riparian woodland habitat is not on site. Potential to occur within disturbance limits is low.
<b>Mammals</b>				
<i>Glaucomys oregonensis californicus</i>	San Bernardino flying squirrel	None None CDFW SSC   USFS Sensitive	Known from black oak or white fir dominated woodlands between 1585 - 2591 m in the San Bernardino and San Jacinto ranges. May be extirpated from San Jacinto range. Needs cavities in trees/snags for nests and cover. Needs nearby water.	Water source (Huston Creek) is ~.25 miles away, and no cavities on trees will be impacted. Potential to occur within disturbance limits is low.
<i>Neotamias speciosus speciosus</i>	lodgpole chipmunk	None None	Summits of isolated Piute, San Bernardino, & San Jacinto mountains. Usually found in open-canopy forests. Habitat is usually lodgepole pine forests in the San Bernardino Mts & chinquapin slopes in the San Jacinto Mts.	Impacts to pine trees are limited to trimming of branches that are overhanging the existing fence line. Potential to occur within disturbance limits is low.
<i>Taxidea taxus</i>	American badger	None None CDFW SSC   IUCN Least Concern	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	No large burrows are on site, and friable soils are limited to slopes that receive landscape maintenance. Potential to occur within disturbance limits is low.
<b>Reptiles</b>				
<i>Anniella stebbinsi</i>	southern California legless lizard	None None CDFW SSC   USFS Sensitive	Broadleaved upland forest   Chaparral   Coastal dunes   Coastal scrub	Habitat adjacent to site is potentially suitable; however, only branches are to be impacted. No leaf litter or burrows are within disturbance limits. Potential to occur within disturbance limits is low.
<i>Diadophis punctatus modestus</i>	San Bernardino ringneck snake	None None	Most common in open, relatively rocky areas. Often in somewhat	Habitat adjacent to site is potentially suitable; however,

Scientific Name	Common Name	Federal Listing State Listing Other Statuses	Habitats	Potential To Occur
		USFS Sensitive	moist microhabitats near intermittent streams. Avoids moving through open or barren areas by restricting movements to areas of surface litter or herbaceous veg.	only branches are to be impacted. No leaf litter or burrows are within disturbance limits. Potential to occur within disturbance limits is low.
<i>Emys marmorata</i>	western pond turtle	None None BLM Sensitive   CDFW SSC   IUCN Vulnerable   USFS Sensitive	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6000 ft elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.	No aquatic habitat exists on site. Potential to occur within disturbance limits is low.
<i>Phrynosoma blainvillii</i>	coast horned lizard	None None BLM Sensitive   CDFW SSC   IUCN Least Concern	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes. Open areas for sunning, bushes for cover, patches of loose soil for burial, and abundant supply of ants and other insects.	Habitat to be disturbed is limited to ruderal annuals along the southern slope of the facility, trimmed branches overhanging existing fence line, and lawn grass. Potential to occur within disturbance limits is low.
<i>Thamnophis hammondi</i>	two-striped gartersnake	None None BLM Sensitive   CDFW SSC   IUCN Least Concern   USFS Sensitive	Coastal California from vicinity of Salinas to northwest Baja California. From sea to about 2134 m elevation. Highly aquatic, found in or near permanent fresh water. Often along streams with rocky beds and riparian growth.	Riparian habitat is not on site. Potential to occur within disturbance limits is low.
<b>Amphibians</b>				
<i>Anaxyrus californicus</i>	arroyo toad	Endangered None CDFW SSC   IUCN Endangered	Desert wash   Riparian scrub   Riparian woodland   South coast flowing waters   South coast standing waters	Aquatic habitat is not on site. Potential to occur within disturbance limits is low.
<i>Rana draytonii</i>	California red-legged frog	Threatened None CDFW SSC   IUCN Vulnerable	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20	Permanent sources of water are not on site. Potential to occur within disturbance limits is low.



Scientific Name	Common Name	Federal Listing State Listing Other Statuses	Habitats	Potential To Occur
			weeks of permanent water for larval development. Must have access to estivation habitat.	
<i>Rana muscosa</i>	southern mountain yellow-legged frog	Endangered Endangered CDFW Watch List   IUCN Endangered   USFS Sensitive	Federal listing refers to populations in the San Gabriel, San Jacinto and San Bernardino mountains (southern DPS). Northern DPS was determined to warrant listing as endangered, Apr 2014, effective Jun 30, 2014. Always encountered within a few feet of water. Tadpoles may require 2 - 4 yrs to complete their aquatic development.	Aquatic/riparian habitat is not on site. Potential to occur within disturbance limits is low.
<b>Fish</b>				
<i>Siphateles bicolor mohavensis</i>	Mohave tui chub	Endangered Endangered AFS Endangered   CDFW Fully Protected	Endemic to the Mojave River basin, adapted to alkaline, mineralized waters. Needs deep pools, ponds, or slough-like areas. Needs vegetation for spawning.	Aquatic habitat is not on site. Potential to occur within disturbance limits is low.
<b>Insects</b>				
<i>Bombus crotchii</i>	Crotch bumble bee	None None	Coastal California east to the Sierra-Cascade crest and south into Mexico. Food plant genera include Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia, and Eriogonum.	Food sources are not on site. Potential to occur within disturbance limits is low.
<i>Bombus morrisoni</i>	Morrison bumble bee	None None IUCN Vulnerable	From the Sierra-Cascade ranges eastward across the intermountain west. Food plant genera include Cirsium, Cleome, Helianthus, Lupinus, Chrysothamnus, and Melilotus.	Food sources are not on site. Potential to occur within disturbance limits is low.
<i>Euchloe hyantis andrewsi</i>	Andrew's marble butterfly	None None	Inhabits yellow pine forest near Lake Arrowhead and Big Bear Lake, San Bernardino Mtns, San Bernardino Co, 1524-1828 m. Hostplants are	Habitat to be disturbed is limited to ruderal annuals along the southern slope of the facility, trimmed branches overhanging

Scientific Name	Common Name	Federal Listing State Listing Other Statuses	Habitats	Potential To Occur
			Streptanthus bernardinus & Arabis holboellii var pinetorum; larval foodplant is Descurainia richardsonii.	existing fence line, and lawn grass. Potential to occur within disturbance limits is low.
<i>Euphydryas editha quino</i>	quino checkerspot butterfly	Endangered None XERCES Critically Imperiled	Chaparral   Coastal scrub	Chaparral/coastal scrub does not occur within the project site. Potential to occur within disturbance limits is low.
<b>Mollusks</b>				
<i>Helminthoglypta taylori</i>	westfork shoulderband	None None	Riparian woodland along the Mojave River, lives under logs, leaves, and other debris.	Riparian habitat is not on site. Potential to occur within disturbance limits is low.
<b>Plants</b>				
<i>Allium howellii</i> var. <i>clokeyi</i>	Mt. Pinos onion	None None 1B.3   USFS Sensitive	Great Basin scrub, pinyon and juniper woodland, meadows and seeps (edges), 1385-1800 m.	Pinyon/juniper woodland is not on site. Potential to occur within disturbance limits is low.
<i>Calochortus palmeri</i> var. <i>palmeri</i>	Palmer's mariposa-lily	None None 1B.2   BLM Sensitive   USFS Sensitive	Meadows and seeps, chaparral, lower montane coniferous forest. Vernally moist places in yellow-pine forest, chaparral. 195-2530 m.	Coniferous forest exists adjacent to project site. Species has potential to occur in adjacent areas, but has low potential to occur within currently defined project footprint.
<i>Calochortus plummerae</i>	Plummer's mariposa-lily	None None 4.2	Coastal scrub, chaparral, valley and foothill grassland, cismontane woodland, lower montane coniferous forest. Occurs on rocky and sandy sites, usually of granitic or alluvial material. Can be very common after fire. 60-2500 m.	Coniferous forest exists adjacent to project site. Species has potential to occur in adjacent areas, but has low potential to occur within currently defined project footprint.
<i>Canbya candida</i>	white pygmy-poppy	None None 4.2   USFS Sensitive	Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland. Gravelly, sandy, granitic places. 600-1460 m.	Joshua tree woodland, desert scrub, and pinyon/juniper woodland are not on site. Potential to occur within disturbance limits is low.
<i>Castilleja lasiorhyncha</i>	San Bernardino Mountains owl's-clover	None None 1B.2   USFS Sensitive	Meadows and seeps, pebble plain, upper montane coniferous forest, chaparral, riparian woodland. Mesic	Mesic sites are not present within current disturbance limits.

Scientific Name	Common Name	Federal Listing State Listing Other Statuses	Habitats	Potential To Occur
			to drying soils in open areas of stream and meadow margins or in vernal wet areas. 1140-2320 m.	Potential to occur within disturbance limits is low.
<i>Chorizanthe xanti</i> var. <i>leucotheca</i>	white-bracted spineflower	None None 1B.2   BLM Sensitive   USFS Sensitive	Mojavean desert scrub, pinyon and juniper woodland, coastal scrub (alluvial fans). Sandy or gravelly places. 365-1830 m.	Desert scrub and juniper/pinyon woodland habitats are not on site. Potential to occur within disturbance limits is low.
<i>Deinandra mohavensis</i>	Mojave tarplant	None Endangered 1B.3   BLM Sensitive   USFS Sensitive	Riparian scrub, coastal scrub, chaparral. Low sand bars in river bed; mostly in riparian areas or in ephemeral grassy areas. 640-1645 m.	Riparian habitat is not on site. Potential to occur within disturbance limits is low.
<i>Dudleya abramsii</i> ssp. <i>affinis</i>	San Bernardino Mountains dudleya	None None 1B.2   USFS Sensitive	Pebble (pavement) plain, upper montane coniferous forest, pinyon and juniper woodland. Outcrops, granite or quartzite, rarely limestone. 1200-2425 m.	Rocky outcrops are not on site, the interior of the fence line is landscaped. Potential to occur within disturbance limits is low.
<i>Eremothera boothii</i> ssp. <i>boothii</i>	Booth's evening-primrose	None None 2B.3	Joshua tree woodland, pinyon and juniper woodland. 285-2290 m.	Joshua tree woodland and pinyon/juniper woodland are not on site. Potential to occur within disturbance limits is low.
<i>Erigeron parishii</i>	Parish's daisy	Threatened None 1B.1	Mojavean desert scrub, pinyon and juniper woodland. Often on carbonate; limestone mountain slopes; often associated with drainages. Sometimes on granite. 1050-2245 m.	Desert scrub and pinyon/juniper woodland are not on site. Potential to occur within disturbance limits is low.
<i>Heuchera parishii</i>	Parish's alumroot	None None 1B.3   USFS Sensitive	Lower montane coniferous forest, subalpine coniferous forest, upper montane coniferous forest, alpine boulder & rock field. Rocky places. Sometimes on carbonate. 1340-3505 m.	Rocky places are not present within or directly adjacent to the project site, interior of the fence line has been landscaped. Potential to occur within disturbance limits is low.
<i>Ivesia argyrocoma</i> var. <i>argyrocoma</i>	silver-haired ivesia	None None 1B.2   USFS Sensitive	Meadows and seeps, pebble plains, upper montane coniferous forest. In pebble plains and meadows with other rare plants. 1490-2960 m.	Meadows and seeps are not within the disturbance limits. Potential to occur within disturbance limits is low.

Scientific Name	Common Name	Federal Listing State Listing Other Statuses	Habitats	Potential To Occur
<i>Lilium parryi</i>	lemon lily	None None 1B.2   USFS Sensitive	Lower montane coniferous forest, meadows and seeps, riparian forest, upper montane coniferous forest. Wet, mountainous terrain; generally in forested areas; on shady edges of streams, in open boggy meadows & seeps. 625-2930 m.	Riparian habitat and boggy meadows are not on site. Potential to occur within disturbance limits is low.
<i>Lycium parishii</i>	Parish's desert-thorn	None None 2B.3	Coastal scrub, Sonoran desert scrub, 135-1000 m.	Coastal scrub or Sonoran desert scrub is not on site. Potential to occur within disturbance limits is low.
<i>Opuntia basilaris</i> var. <i>brachyclada</i>	short-joint beavertail	None None 1B.2   BLM Sensitive   USFS Sensitive	Chaparral, Joshua tree woodland, Mojavean desert scrub, pinyon-juniper woodland. Sandy soil or coarse, granitic loam. 425-1800 m.	Chaparral, Joshua tree woodland, desert scrub, and pinyon/juniper woodland is not on site. Potential to occur within disturbance limits is low.
<i>Pediomelum castoreum</i>	Beaver Dam breadroot	None None 1B.2   BLM Sensitive	Joshua tree woodland, Mojavean desert scrub. Sandy soils; washes and roadcuts. 605-1485 m.	Joshua tree woodland or desert scrub is not on site. Potential to occur within disturbance limits is low.
<i>Perideridia parishii</i> ssp. <i>parishii</i>	Parish's yampah	None None 2B.2	Lower montane coniferous forest, meadows and seeps, upper montane coniferous forest. Damp meadows or along streambeds-prefers an open pine canopy. 1470-2530 m.	Damp meadows or streambeds are not on site. Potential to occur within disturbance limits is low.
<i>Scutellaria bolanderi</i> ssp. <i>austromontana</i>	southern mountains skullcap	None None 1B.2   USFS Sensitive	Chaparral, cismontane woodland, lower montane coniferous forest. In gravelly soils on streambanks or in mesic sites in oak or pine woodland. 425-2000 m.	Mesic areas or streambeds are not on site. Potential to occur within disturbance limits is low.
<i>Acanthoscyphus parishii</i> var. <i>parishii</i>	Parish's oxytheca	None None 4.2	Chaparral, Lower montane coniferous forest in sandy or gravelly soils, 1220-2600 m	Rocky/sandy soils are not present on site. Potential to occur within disturbance limits is low.

Scientific Name	Common Name	Federal Listing State Listing Other Statuses	Habitats	Potential To Occur
<i>Allium parishii</i>	Parish's onion	None None 4.3	Joshua tree woodland, Mojavean desert scrub, Pinyon and juniper woodland, rocky soils, 900-1735 m	Joshua tree woodland, desert scrub, and pinyon/juniper woodland habitats are not on site. Potential to occur within disturbance limits is low.
<i>Androsace elongata</i> ssp. <i>acuta</i>	California androsace	None None 4.2	Chaparral, Cismontane woodland, Coastal scrub, Meadows and seeps, Pinyon and juniper woodland, Valley and foothill grassland, 150-1305 m	Meadows and/or seeps are not present on the project site. Potential to occur within disturbance limits is low.
<i>Azolla microphylla</i>	Mexican mosquito fern	None None 4.2	Marshes and swamps (ponds, slow water), 30-100 m	Marshes or swamps are not present on the project site. Potential to occur within disturbance limits is low.
<i>Deinandra mohavensis</i>	Mojave tarplant	None CE 1B.3	Chaparral, Coastal scrub, Riparian scrub, mesic areas, 640-1600 m	Mesic areas are not present on the project site; riparian or coastal scrub and chaparral are not on the project site. Potential to occur within disturbance limits is low.
<i>Eriophyllum lanatum</i> var. <i>obovatum</i>	southern Sierra woolly sunflower	None None 4.3	Lower montane coniferous forest, Upper montane coniferous forest in sandy loam soils, 1114-2500 m	Habitat to be disturbed is limited to ruderal annuals along the southern slope of the facility, trimmed branches overhanging existing fence line, and lawn grass. Potential to occur within disturbance limits is low.
<i>Ivesia argyrocoma</i> var. <i>argyrocoma</i>	silver-haired ivesia	None None 1B.2	Meadows and seeps (alkaline), Pebble (Pavement) plain, Upper montane coniferous forest, 1463-2960	Meadows and seeps are not present on site. Potential to occur within disturbance limits is low.
<i>Juncus duranii</i>	Duran's rush	None None 4.3	Lower montane coniferous forest, Meadows and seeps, Upper montane coniferous forest, mesic areas, 1768-2804 m	Mesic areas/meadows and seeps are not present on site. Potential to occur within disturbance limits is low.
<i>Lilium humboldtii</i> ssp. <i>ocellatum</i>	ocellated Humboldt lily	None None	Openings within Chaparral, Cismontane woodland, Coastal	Habitat to be disturbed is limited to ruderal annuals along the

Scientific Name	Common Name	Federal Listing State Listing Other Statuses	Habitats	Potential To Occur
		4.2	scrub, Lower montane coniferous forest, Riparian woodland, 30-1800 m	southern slope of the facility, trimmed branches overhanging existing fence line, and lawn grass. Potential to occur within disturbance limits is low.
<i>Packera ionophylla</i>	Tehachapi ragwort	None None 4.3	Lower montane coniferous forest, Upper montane coniferous forest, granitic or rocky soils in shaded areas, 1500-2700 m	Habitat to be disturbed is limited to ruderal annuals along the southern slope of the facility, trimmed branches overhanging existing fence line, and lawn grass. Potential to occur within disturbance limits is low.
<i>Phacelia exilis</i>	Transverse Range phacelia	None None 4.3	Lower montane coniferous forest, Meadows and seeps, Pebble (Pavement) plain, Upper montane coniferous forest, sandy or gravelly soils, 1100-2700 m	Meadows and seeps/wet areas are not on the project site. Potential to occur within disturbance limits is low.
<i>Phacelia mohavensis</i>	Mojave phacelia	None None 4.3	Cismontane woodland, Lower montane coniferous forest, Meadows and seeps, Pinyon and juniper woodland, sandy or gravelly soils, 1400-2500 m	Meadows and seeps/wet areas are not present on the project site. Potential to occur within disturbance limits is low.
<i>Sidothea caryophylloides</i>	chickweed oxytheca	None None 4.3	Lower montane coniferous forest, sandy soils, 1114-2600 m	Sandy soils are not on site. Potential to occur within disturbance limits is low.
<i>Streptanthus bernardinus</i>	Laguna Mountains jewelflower	None None 4.3	Chaparral, Lower montane coniferous forest, 670-2500 m	Habitat to be disturbed is limited to ruderal annuals along the southern slope of the facility, trimmed branches overhanging existing fence line, and lawn grass. Habitat is adjacent to site, but potential to occur within disturbance limits is low.
<i>Symphyotrichum defoliatum</i>	San Bernardino aster	None None 1B.2	Cismontane woodland, Coastal scrub, Lower montane coniferous forest, Meadows and seeps, Marshes and swamps, Valley and foothill	Mesic areas are not present on site. Potential to occur within disturbance limits is low.

Scientific Name	Common Name	Federal Listing State Listing Other Statuses	Habitats	Potential To Occur
			grassland (vernally mesic), near ditches, streams, springs, 2-2040 m	
<i>Syntrichopappus lemmonii</i>	Lemmon's syntrichopappus	None None 4.3	Chaparral, Joshua tree woodland, Pinyon and juniper woodland, sandy or gravelly soils, 500-1830 m	Joshua tree woodland, chaparral, and pinyon/juniper woodland habitats are not on site. Potential to occur within disturbance limits is low.
<i>Trichostema micranthum</i>	small-flowered bluecurls	None None 4.3	Lower montane coniferous forest, Meadows and seeps	Meadows and seeps/wet areas are not present on the project site. Potential to occur within disturbance limits is low.
<b>Habitats</b>				
Southern Sycamore Alder Riparian Woodland	Southern Sycamore Alder Riparian Woodland	None None		Habitat is not present on site.

## Coding and Terms

E = Endangered    T = Threatened    C = Candidate    SSC = Species of Special Concern    R = Rare

**State Species of Special Concern:** An administrative designation given to vertebrate species that appear to be vulnerable to extinction because of declining populations, limited acreages, and/or continuing threats. Raptor and owls are protected under section 3502.5 of the California Fish and Game code: “It is unlawful to take, possess or destroy any birds in the orders Falconiformes or Strigiformes or to take, possess or destroy the nest or eggs of any such bird.”

### Global Rankings (Species or Natural Community Level):

G1 = Critically Imperiled – At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.

G2 = Imperiled – At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.

G3 = Vulnerable – At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.

G4 = Apparently Secure – Uncommon but not rare; some cause for long-term concern due to declines or other factors.

G5 = Secure – Common; widespread and abundant.

**Subspecies Level:** Taxa which are subspecies or varieties receive a taxon rank (T-rank) attached to their G-rank. Where the G-rank reflects the condition of the entire species, the T-rank reflects the global situation of just the subspecies. For example: the Point Reyes mountain beaver, *Aplodontia rufa* ssp. *phaea* is ranked G5T2. The G-rank refers to the whole species range i.e., *Aplodontia rufa*. The T-rank refers only to the global condition of ssp. *phaea*.

### State Ranking:

S1 = Critically Imperiled – Critically imperiled in the State because of extreme rarity (often 5 or fewer populations) or because of factor(s) such as very steep declines making it especially vulnerable to extirpation from the State.

S2 = Imperiled – Imperiled in the State because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the State.

S3 = Vulnerable – Vulnerable in the State due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the State.

S4 = Apparently Secure – Uncommon but not rare in the State; some cause for long-term concern due to declines or other factors.

S5 = Secure – Common, widespread, and abundant in the State.

### California Rare Plant Rankings (CNPS List):

1A = Plants presumed extirpated in California and either rare or extinct elsewhere.

1B = Plants rare, threatened, or endangered in California and elsewhere.

2A = Plants presumed extirpated in California, but common elsewhere.

2B = Plants rare, threatened, or endangered in California, but more common elsewhere.

3 = Plants about which more information is needed; a review list.

4 = Plants of limited distribution; a watch list.

### Threat Ranks:

.1 = Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)

.2 = Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)

.3 = Not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)



## **Appendix C**

### **Cultural Resources Report**

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**IDENTIFICATION AND EVALUATION OF HISTORIC PROPERTIES**  
**HUSTON CREEK WASTEWATER TREATMENT PLANT**

**Community of Crestline**  
**San Bernardino County, California**

**For Submittal to:**

Crestline Sanitation District  
24516 Lake Drive  
Crestline, CA 92325  
*and*

State Water Resources Control Board  
1001 I Street/P.O. Box 100  
Sacramento, CA 95814

**Prepared for:**

Jericho Systems, Inc.  
47 North First Street  
Redlands, CA 92373

**Prepared by:**

CRM TECH  
1016 East Cooley Drive, Suite A/B  
Colton, CA 92324

Bai “Tom” Tang, Principal Investigator  
Michael Hogan, Principal Investigator

August 21, 2019  
CRM TECH Contract No. 3504

**Title:** Identification and Evaluation of Historic Properties: Huston Creek Wastewater Treatment Plant, Community of Crestline, San Bernardino County, California

**Author(s):** Bai “Tom” Tang, Principal Investigator/Historian  
Deirdre Encarnación, Archaeologist/Report Writer  
Daniel Ballester, Archaeologist/Field Director  
Ben Kerridge, Archaeologist

**Affiliation:** CRM TECH  
1016 East Cooley Drive, Suite A/B  
Colton, CA 92324  
(909) 824-6400

**Date:** August 21, 2019

**For Submittal to:** Crestline Sanitation District  
24516 Lake Drive  
Crestline, CA 92325  
(909) 338-1751  
*and*  
State Water Resources Control Board  
1001 I Street/P.O. Box 100  
Sacramento, CA 95814  
(916) 341-5057

**Prepared for:** Shay Lawrey  
Jericho Systems, Inc.  
47 North First Street  
Redlands, CA 92373  
(909) 307-5633

**USGS Quadrangle:** Silverwood Lake, Calif., 7.5’ quadrangle (Section 14, T2N R4W, San Bernardino Baseline and Meridian)

**Project Size:** Approximately four acres

**Keywords:** San Bernardino Mountains; Phase I historical/archaeological resources survey; Huston Creek Wastewater Treatment Plant, ca. 1952 (altered); no “historic property” or “historical resource” affected

## EXECUTIVE SUMMARY

Between June and August 2019, at the request of Jericho Systems, Inc., CRM TECH performed a cultural resources study on the site of the Huston Creek Wastewater Treatment Plant (WWTP) in the unincorporated community of Crestline, San Bernardino County, California. The subject property of the study is the Area of Potential Effects (APE) for the proposed expansion of the plant, which encompasses the entire area occupied by the existing facilities, measuring approximately four acres in total. The expansion project, or the undertaking, entails primarily adding a new primary clarifier, backup generator, trickling filter recirculation pumps, and a sludge dewatering building.

The APE is delineated to cover the maximum extent of ground disturbance required for the undertaking, including all areas to be impacted by construction activities or by the operation of construction equipment. The vertical extent of the APE, represented by the maximum depth of excavations, will not exceed 15 feet below surface. The location of the APE is at the northern end of Huston Drive, approximately 900 feet north of Zermatt Drive, in the southwest quarter of Section 14, T2N R4W, San Bernardino Baseline and Meridian.

The study is a part of the environmental review process for the proposed undertaking, as required by the Crestline Sanitation District (CSD) in compliance with the California Environmental Quality Act (CEQA). As the undertaking will involve federal funds administered by the State Water Resources Control Board (SWRCB), the study is also intended to comply with Section 106 of the National Historic Preservation Act as a part of the CEQA-Plus process. The purpose of the study is to provide the CSD and the SWRCB with the necessary information and analysis to determine whether the undertaking would have an effect on any “historic properties,” as defined by 36 CFR 800.16(l), or “historical resources,” as defined by PRC §5020.1(j), that may exist in or near the APE.

In order to accomplish this objective, CRM TECH conducted a historical/archaeological resources records search, pursued historical and geoarchaeological background research, consulted with Native American representatives, and carried out a systematic field survey. The results of these research procedures indicate that the existing Huston Creek WWTP was originally built in 1952 but was upgraded and expanded repeatedly in various years between 1972 and 2001. Today, some of the early facilities are still extant and functional, most notably the existing primary clarifiers and the secondary clarifier, but almost all of the high-profile components of the plant, such as the buildings and structures, have been added since 1972, and the current appearance of the plant as a whole is predominantly modern in character.

Due to the lack of integrity to relate to the historic period, the Huston Creek WWTP is no longer a potential candidate for listing in the National Register of Historic Places or the California Register of Historical Resources. Therefore, it does not constitute a potential “historic property”/“historical resource,” and requires no further consideration in the Section 106- and CEQA-compliance processes. No other properties of historical or prehistoric origin were encountered within or adjacent to the APE during this study, and the subsurface sediments within the vertical extent of the APE, consisting mostly of artificial fill and granitic bedrock, appear to be very low in sensitivity for potentially significant archaeological remains.

Based on these findings, and pursuant to 36 CFR 800.4(d)(1) and Calif. PRC §21084.1, CRM TECH recommends to the CSD and the SWRCB a conclusion that *no “historic properties” or “historical resources” will be affected by the proposed undertaking*. No further cultural resources investigation is recommended for the undertaking unless project plans undergo such changes as to include areas not covered by this study. However, if buried cultural materials are encountered during earth-moving operations associated with the undertaking, all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds.

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## INTRODUCTION

Between June and August 2019, at the request of Jericho Systems, Inc., CRM TECH performed a cultural resources study on the site of the Huston Creek Wastewater Treatment Plant (WWTP) in the unincorporated community of Crestline, San Bernardino County, California (Fig. 1). The subject property of the study is the Area of Potential Effects (APE) for the proposed expansion of the plant, which encompasses the entire area occupied by the existing facilities, measuring approximately four acres in total (Figs. 2, 3). The expansion project, or the undertaking, entails primarily adding a new primary clarifier, backup generator, trickling filter recirculation pumps, and a sludge dewatering building.

The APE is delineated to cover the maximum extent of ground disturbance required for the undertaking, including all areas to be impacted by construction activities or by the operation of construction equipment. The vertical extent of the APE, represented by the maximum depth of excavations, will not exceed 15 feet below surface. The location of the APE is at the northern end of Huston Drive, approximately 900 feet north of Zermatt Drive, in the southwest quarter of Section 14, T2N R4W, San Bernardino Baseline and Meridian (Figs. 2, 3).

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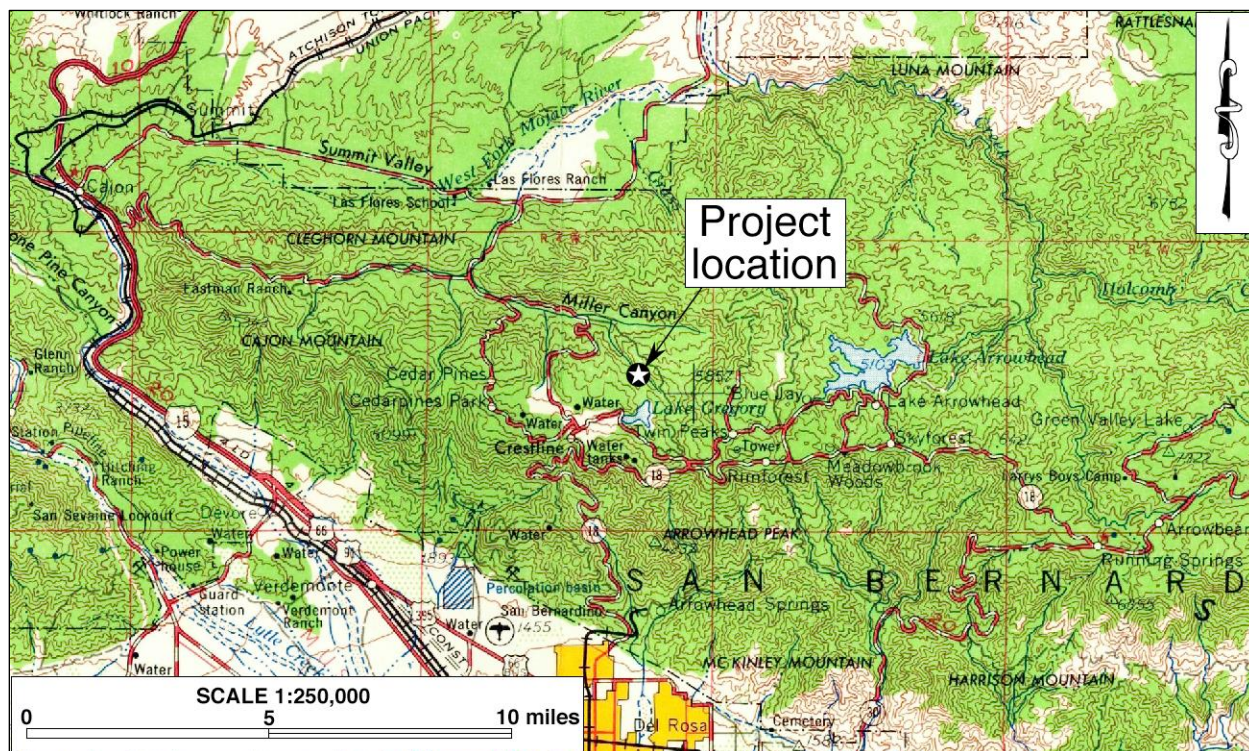


Figure 1. Vicinity of the APE. (Based on USGS San Bernardino, Calif., 60'x30' quadrangle [USGS 1969])



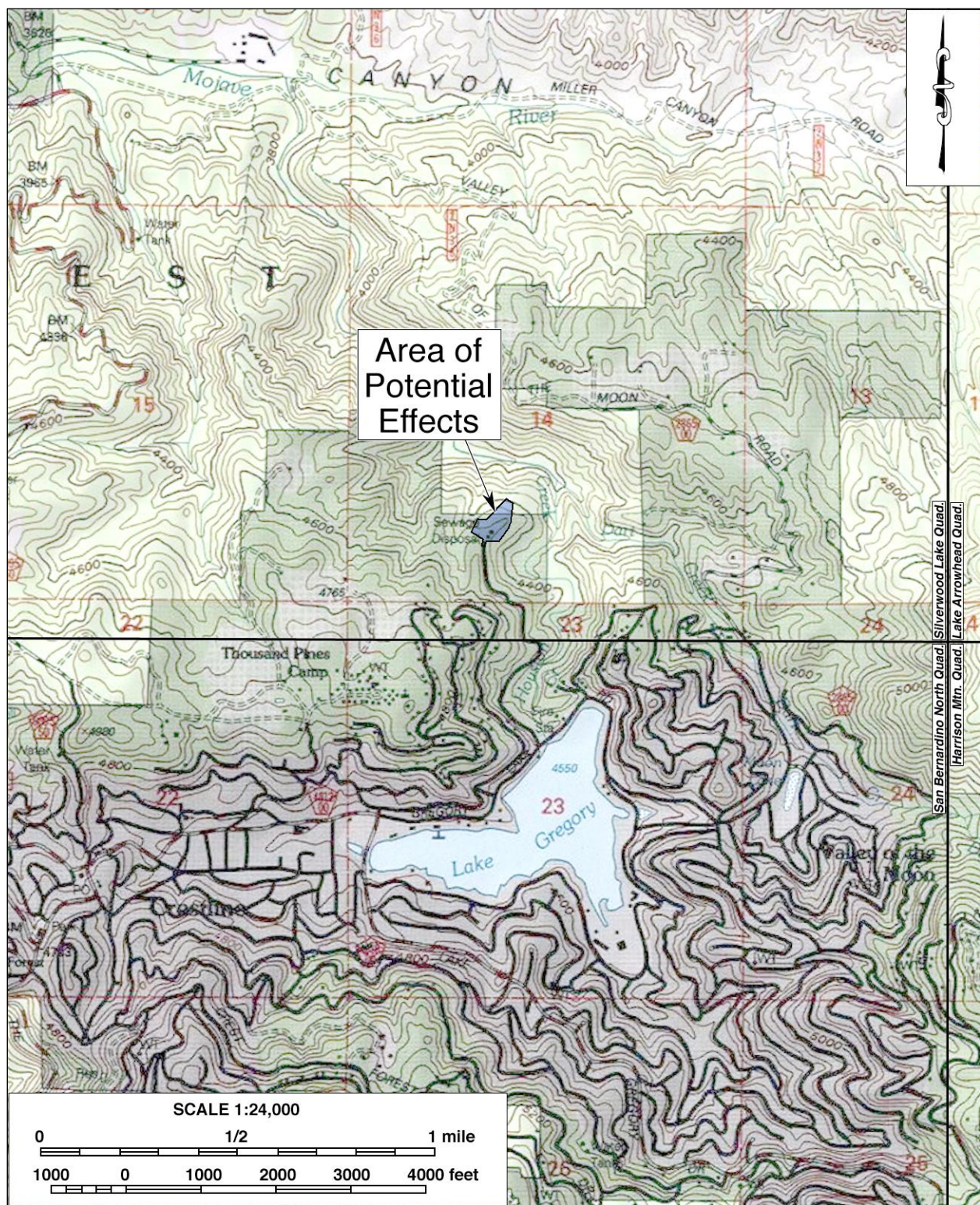


Figure 2. Area of Potential Effects. (Based on USGS Harrison Mountain, Lake Arrowhead, San Bernardino North, and Silverwood Lake, Calif., 7.5' quadrangles [USGS 1996a-1996d])



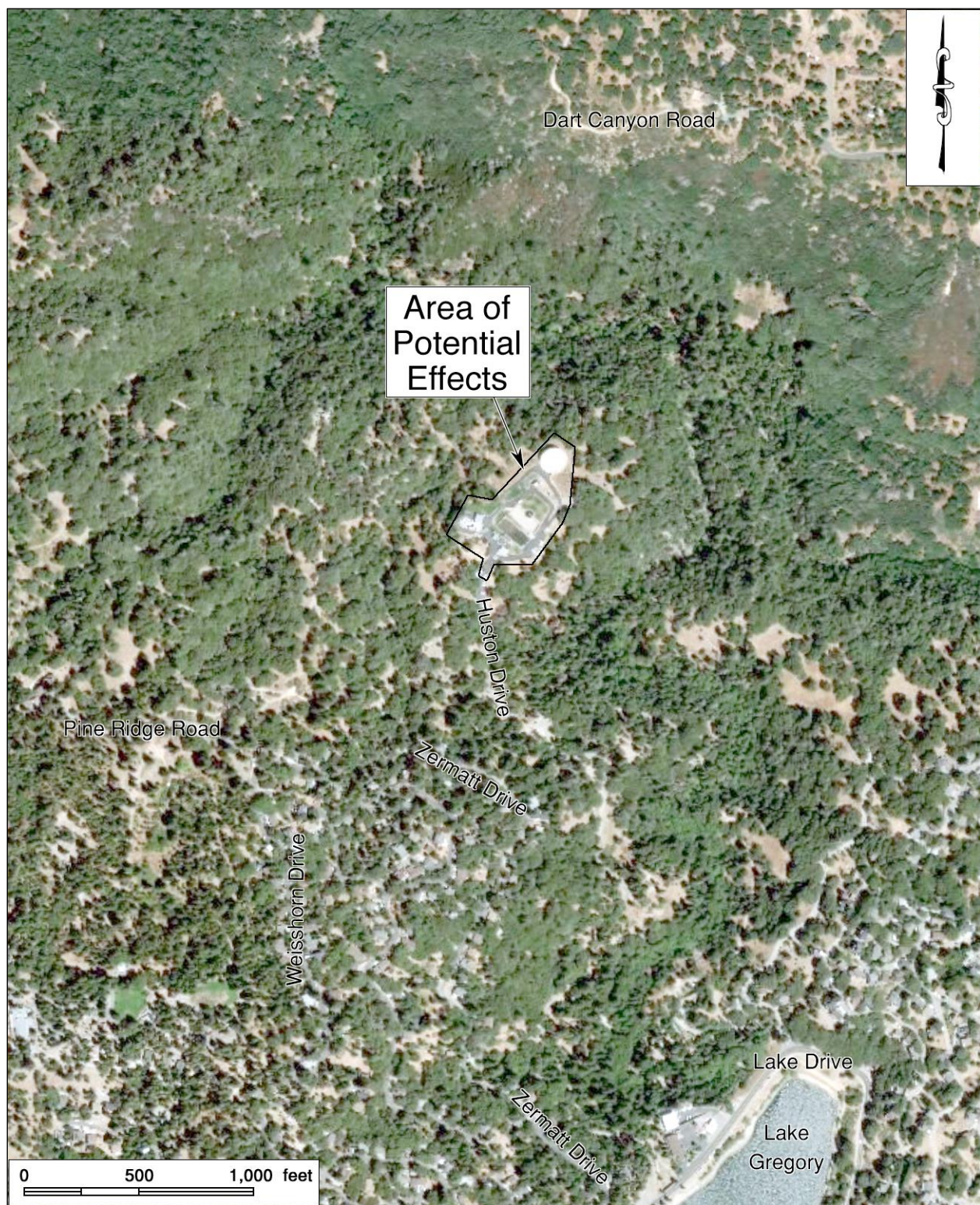


Figure 3. Aerial image of the APE. (Based on Google Earth imagery [Google Earth 2018])



provide the CSD and the SWRCB with the necessary information and analysis to determine whether the undertaking would have an effect on any “historic properties,” as defined by 36 CFR 800.16(l), or “historical resources,” as defined by PRC §5020.1(j), that may exist in or near the APE.

In order to accomplish this objective, CRM TECH conducted a historical/archaeological resources records search, pursued historical and geoarchaeological background research, consulted with Native American representatives, and carried out a systematic field survey. The following report is a complete account of the methods, results, and final conclusion of the study. Personnel who participated in the study are named in the appropriate sections below, and their qualifications are provided in Appendix 1.

## SETTING

### CURRENT NATURAL SETTING

The APE is situated deep in the San Bernardino Mountains, roughly three miles northwest of Lake Gregory, an artificial lake created in 1937-1938 by damming Huston Creek (a.k.a. Houston Creek; Jensen 2017). Because of its mountainous setting at high elevations, the area enjoys an alpine climate and foresty environment, in sharp contrast to the Mediterranean climate and desert environment in most of southern California. Temperatures in the vicinity vary from an average low of nine degrees Fahrenheit in January to an average high of 89 degrees in July, much closer to the national average than to that of the San Bernardino-Riverside region (NOAA 2018). The average annual precipitation reaches more than 18 inches of rainfall and 35 inches of snowfall (*ibid.*).

The irregularly shaped APE coincides with the footprint of the existing Huston Creek WWTP, surrounded on all sides by chain-link fences and, beyond them, forest land of the San Bernardino National Forest (Figs. 3, 4). Elevations in the APE range approximately from 4,425 feet to 4,480 feet above mean sea level, and the terrain features a series of relatively level terraces with significant sloping between them (Fig. 4). Surface soils consist of fine- to medium-grained silty sands mixed



Figure 4. Typical landscapes within the APE. *Left*: the existing primary clarifiers, view to the northwest; *right*: overview of the plant, view to the northeast. (Photographs taken on June 28, 2019)

with rocks, and much of the native ground surface is obscured by buildings, pavement, and landscaping. Vegetation in the APE consists mostly of landscaping plants, but the surrounding area features a woodland environment with evergreen trees such as cedar, ponderosa, and Jeffery pine as well as various small bushes and shrubs (Fig. 4).

## **CULTURAL SETTING**

### **Prehistoric Context**

The earliest evidence of human occupation in Inland southern California was discovered below the surface of an alluvial fan in the northern portion of the Lakeview Mountains, overlooking the San Jacinto Valley, with radiocarbon dates clustering around 9,500 B.P. (Horne and McDougall 2008). Another site found near the shoreline of Lake Elsinore, close to the confluence of Temescal Wash and the San Jacinto River, yielded radiocarbon dates between 8,000 and 9,000 B.P. (Grenda 1997). Additional sites with isolated Archaic dart points, bifaces, and other associated lithic artifacts from the same age range have been found in the Cajon Pass area, typically atop knolls with good viewsheds (Basgall and True 1985; Goodman and McDonald 2001; Goodman 2002; Milburn et al. 2008).

The cultural prehistory of southern California has been summarized into numerous chronologies, including those developed by Chartkoff and Chartkoff (1984), Warren (1984), and others. Specifically, the prehistory of the region has been addressed by O'Connell et al. (1974), McDonald et al. (1987), Keller and McCarthy (1989), Grenda (1993), Goldberg (2001), and Horne and McDougall (2008). Although the beginning and ending dates of different cultural horizons vary regionally, the general framework of regional prehistory can be broken into three primary periods:

- **Paleoindian Period (ca. 18,000-9,000 B.P.):** Native peoples of this period created fluted spearhead bases designed to be hafted to wooden shafts. The distinctive method of thinning bifaces and spearhead preforms by removing long, linear flakes leaves diagnostic Paleoindian markers at tool-making sites. Other artifacts associated with the Paleoindian toolkit include choppers, cutting tools, retouched flakes, and perforators. Sites from this period are very sparse across the landscape and most are deeply buried.
- **Archaic Period (ca. 9,000-1,500 B.P.):** Archaic sites are characterized by abundant lithic scatters of considerable size with many biface thinning flakes, bifacial preforms broken during manufacture, and well-made groundstone bowls and basin metates. As a consequence of making dart points, many biface thinning waste flakes were generated at individual production stations, which is a diagnostic feature of Archaic sites.
- **Late Prehistoric Period (ca. 1,500 B.P.-contact):** Sites from this period typically contain small lithic scatters from the manufacture of small arrow points, expedient groundstone tools such as tabular metates and unshaped manos, wooden mortars with stone pestles, acorn or mesquite bean granaries, ceramic vessels, shell beads suggestive of extensive trading networks, and steatite implements such as pipes and arrow shaft straighteners.

### **Ethnohistoric Context**

The APE lies in the heart of the homeland of the Serrano people, which is centered in the San Bernardino Mountains. Together with that of the Vanyume people, linguistically a subgroup, the

traditional territory of the Serrano also includes part of the San Gabriel Mountains, much of the San Bernardino Valley, and the Mojave River valley in the southern portion of the Mojave Desert, reaching as far east as the Cady, Bullion, Sheep Hole, and Coxcomb Mountains. The name “Serrano” was derived from a Spanish term meaning “mountaineer” or “highlander.” The basic written sources on Serrano culture are Kroeber (1925), Strong (1929), and Bean and Smith (1978). The following ethnographic discussion of the Serrano people is based mainly on these sources.

Prior to European contact, the Serrano were primarily hunter-gatherers and occasionally fishers, and settled mostly on elevated terraces, hills, and finger ridges near where flowing water emerged from the mountains. They were loosely organized into exogamous clans, which were led by hereditary heads, and the clans in turn were affiliated with one of two exogamous moieties. The clans were patrilineal, but their exact structure, function, and number are unknown, except that each clan was the largest autonomous political and landholding unit. There was no pan-tribal political union among the clans, but they shared strong trade, ceremonial, and marital connections that sometimes also extended to other surrounding nations, such as the Kitanemuk, the Tataviam, and the Cahuilla.

Although contact with Europeans may have occurred as early as 1771 or 1772, Spanish influence on Serrano lifeways was negligible until the 1810s, when a mission *asistencia* was established on the southern edge of Serrano territory. Between then and the end of the mission era in 1834, most of the Serrano in the western portion of their traditional territory were removed to the nearby missions. In the eastern portion, a series of punitive expeditions in 1866-1870 resulted in the death or displacement of almost all remaining Serrano population in the San Bernardino Mountains. Today, most Serrano descendants are affiliated with the San Manuel Band of Mission Indians, the Morongo Band of Mission Indians, or the Serrano Nation of Indians.

## Historic Context

In 1772, a small force of Spanish soldiers under the command of Pedro Fages, military *comandante* of Alta California, became the first Europeans to set foot in the San Bernardino Mountains, followed shortly afterwards by the famed explorer Francisco Garcés in 1776 (Beck and Haase 1974:15). During the next 70 years, however, the Spanish/Mexican colonization activities in Alta California, which concentrated predominantly in the coastal regions, left little physical impact on the San Bernardinos. Aside from occasional explorations and punitive expeditions against Indian livestock raiders, the mountainous hinterland of California remained largely beyond the attention of the missionaries, the *rancheros*, and the provincial authorities. The name “San Bernardino” was bestowed on the region in the 1810s, when the *asistencia* and an associated mission rancho were established under that name in the valley lying to the south (Lerch and Haenszel 1981).

After the U.S. annexation of Alta California in 1848, the rich resources offered by the San Bernardino Mountains brought about drastic changes, spurred by the influxes of settlers from the eastern United States. Beginning in the early 1850s, the dense forest was turned into the scene—and victim—of a booming lumber industry, which brought the first wagon roads and industrial establishments into the San Bernardino Mountains. In 1860, the discovery of gold in the Bear and Holcomb Valleys ushered in a miniature gold rush, and with it a number of mining towns with several thousand residents. Around the same time, the lush mountain range also attracted cattlemen, shepherds, and their herds, and within the next two decades gained the reputation of being the best

summer grazing land in southern California\*. Then in 1884-1885, an even more valuable resource in arid southern California, water, became the focus of development in the San Bernardino Mountains when the Bear Valley Land and Water Company created the Big Bear Lake reservoir to ensure the success and prosperity of the Redlands colony (Robinson 1989:170).

By the 1890s, excessive logging and sheep grazing in the San Bernardino Mountains had given rise to a forest conservation movement among residents of the San Bernardino Valley to protect the watershed. The movement succeeded, in 1893, in persuading the U.S. government to create the San Bernardino Forest Reserve, later renamed the San Bernardino National Forest, and over the next few decades effectively brought an end to logging and sheep grazing in the San Bernardino Mountains (Robinson 1989:96-99; Robinson and Risher 1990:9). In the meantime, the favorable climate, enticing scenery, and the string of manmade lakes gradually propelled the resort industry to the forefront of development in the San Bernardino Mountains, burgeoning from the first commercial resort established on the shore of Big Bear Lake in 1888 (Atchley 1980:22-23). In 1915, the budding industry received a major boost from the completion of the automobile highway known as Rim of the World Drive (Drake 1949:26; Robinson 1989:183-185). Since then, the San Bernardino Mountains have grown into—and remain—one of southern California’s most popular tourist attractions.

## **RESEARCH METHODS**

### **RECORDS SEARCH**

On June 18, 2019, CRM TECH archaeologist Ben Kerridge completed the records search at the South Central Coastal Information Center (SCCIC). Located on the campus of California State University, Fullerton, the SCCIC is the official cultural resource records repository for the County of San Bernardino. During the records search, Kerridge examined maps and records on file at the SCCIC for previously identified cultural resources and existing cultural resources reports within a one-mile radius of the APE. Previously identified cultural resources include properties designated as California Historical Landmarks, Points of Historical Interest, or San Bernardino County Landmarks, as well as those listed in the National Register of Historic Places, the California Register of Historical Resources, or the California Historical Resources Inventory.

### **HISTORICAL BACKGROUND RESEARCH**

Historical background research for this study was conducted by CRM TECH principal investigator/historian Bai “Tom” Tang. Sources consulted during the research included published literature in local and regional history, U.S. General Land Office (GLO) land survey plat map dated 1886, U.S. Geological Survey (USGS) topographic maps dated 1901-1996, and aerial photographs taken in 1938-2018. The historic maps are collected at the Science Library of the University of California, Riverside, and the California Desert District of the U.S. Bureau of Land Management, located in Moreno Valley. The aerial photographs are available at the Nationwide Environmental Title Research (NETR) Online website and through the Google Earth software.

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\* For further information on the lumber industry, mining, and ranching in the San Bernardino Mountains, see LaFuze (1971) and Robinson (1989).

## **FIELD SURVEY**

On June 28, 2019, CRM TECH field director Daniel Ballester carried out the field survey of the APE. The survey was conducted at an intensive level by walking a series of parallel transects oriented north-south and spaced five meters (approximately 15 feet) apart wherever the regular transect system was practicable. When the transects were blocked by buildings and structures, Ballester stayed as close to the survey plan as possible and inspected the ground surface wherever it was exposed.

In this way, the entire APE was examined systematically and carefully for any evidence of human activities dating to the prehistoric or historic period (i.e., 50 years or older). Except where the surface is completely obscured by buildings, pavement, lawns, or other existing features of the plant, ground visibility ranged from fair (40-50%) to good (70-80%) depending on the density of vegetation growth. In addition to the archaeological survey, Ballester also inspected all built-environment features at the plant and documented the current conditions of those that appeared to date to the historic period through both written notes and photographic records.

## **NATIVE AMERICAN PARTICIPATION**

On June 12, 2019, CRM TECH submitted a written request to the State of California Native American Heritage Commission (NAHC) for a records search in the commission's Sacred Lands File. Following the NAHC's recommendations and previously established consultation protocol, CRM TECH further contacted a total of six Native American representatives in the region in writing on June 28, 2019, for additional information on potential Native American cultural resources in the project vicinity. Follow-up telephone solicitations were carried out between July 16 and 24, 2019. Correspondence between CRM TECH and the Native American representatives is summarized below and attached to the report in Appendix 2.

## **GEOARCHAEOLOGICAL ANALYSIS**

As part of the research procedures, CRM TECH archaeologist Deirdre Encarnación pursued geoarchaeological analysis to assess the APE's potential for the deposition and preservation of subsurface cultural deposits from the prehistoric period, which cannot be detected through a standard surface archaeological survey. Sources consulted for this purpose included primarily topographic and geologic maps and reports pertaining to the surrounding area. Findings from these sources were used to develop a geomorphologic history of the APE and address geoarchaeological sensitivity of the vertical APE.

## **RESULTS AND FINDINGS**

### **RECORDS SEARCH**

According to SCCIC records, the APE was included, either entirely or partially, in three previous cultural resources studies completed in 1994, 2005, and 2011 (Fig. 5). The first two studies were both conducted in association with the construction of new facilities at the Huston Creek WWTP,



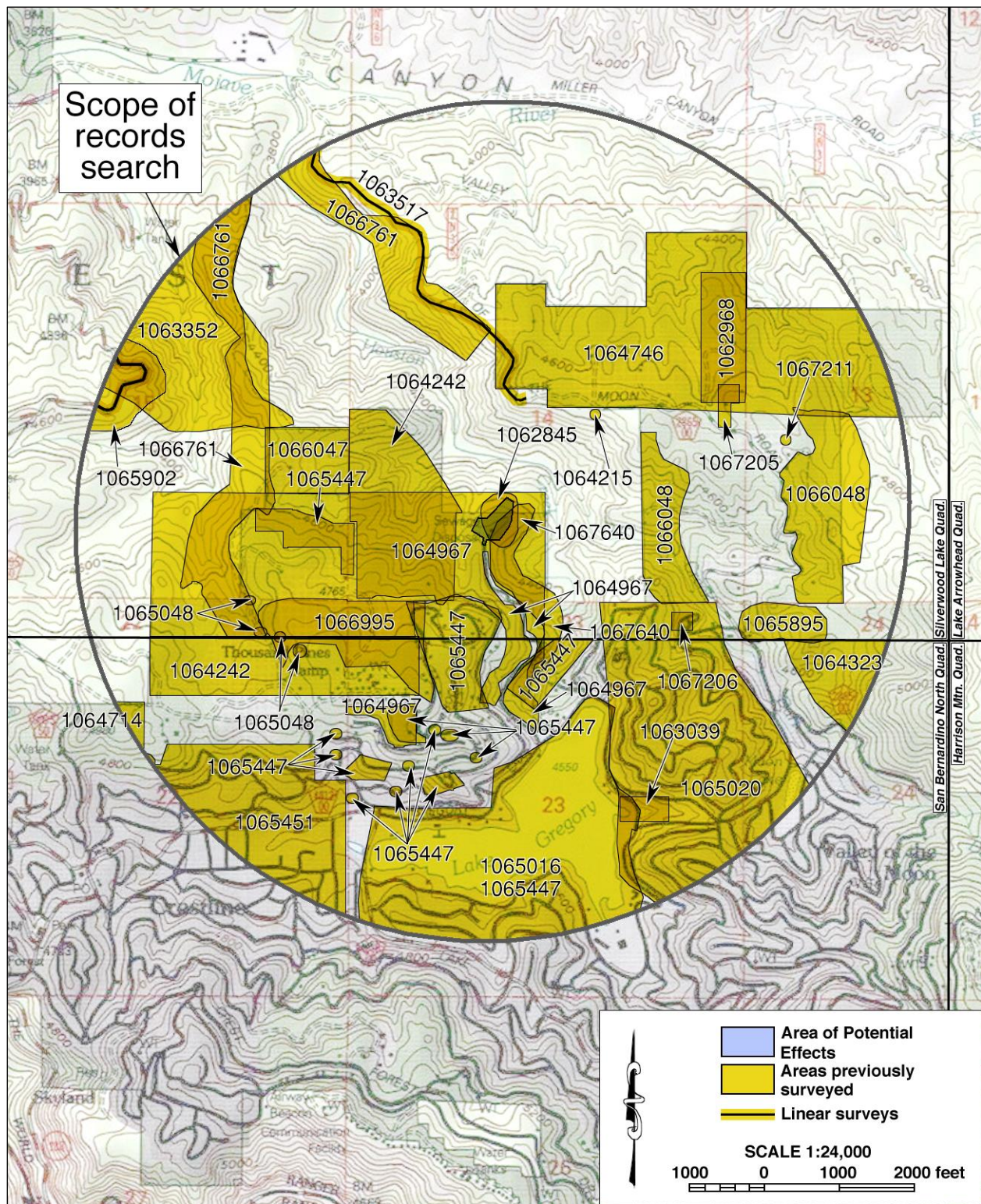


Figure 5. Previous cultural resources studies in the vicinity of the APE, listed by SCCIC file number. (See App. 3 for locations of known historical/archaeological resources)

and the scopes of these studies included intensive-level field surveys (Lerch 1994:9; Mirro 2005:2). However, since these studies are now well over ten years old, they are considered out-of-date for statutory compliance purposes today. The third study consisted of a records search only and did not involve any fieldwork (Losekoot 2011). No historical/archaeological resources were identified within or adjacent to the current APE during these studies or any other studies in the vicinity.

Outside the APE but within a one-mile radius, SCCIC records show more than 20 other previous studies on various tracts of land and linear features (Fig. 5). In all, more than 50% of the land within the scope of the records search has been surveyed, resulting in the identification of nine historical/archaeological sites, including three “pending” sites, as listed in Table 1 (see App. 3 for site locations). All of these sites dated primarily to the historic period, and four of them consisted of features associated with the lumber industry. The other five sites included a homestead, structural remains, refuse scatters, and various infrastructure elements.

<b>Primary No.</b>	<b>Trinomial</b>	<b>Description</b>
36-008069	CA-SBR-8069H	Residential complex with orchard, irrigation features, refuse, and road
36-013426	N/A	Concrete slab foundation
36-014906	CA-SBR-13144/H	Scattered historic-period refuse with prehistoric cores and flakes
36-020287	N/A	Logging cabins and mill site
36-024767	CA-SBR-15808H	Segment of Lake Gregory Road
36-026759	N/A	Two segments of cast-iron pipe from water conveyance system
P1071-5H	N/A (pending site)	Hunt’s steam sawmill, ca. 1885
P1334-1H	N/A (pending site)	Sawmill, ca. 1885
P1334-17H	N/A (pending site)	Miller’s cabin and mine

Although none of the nine sites was exclusively or predominantly of prehistoric—i.e., Native American—origin, the refuse scatter at Site 36-014906, situated nearly a mile north of the APE, also included a small prehistoric element with chipped-stone cores and flakes. None of these known sites was found in the immediate vicinity of the APE, and all of them was located at least a half-mile away. Therefore, none of them requires further consideration during this study.

## **HISTORICAL RESEARCH**

Historical sources consulted for this study reveal that although the surrounding area was involved in the once booming lumber industry at least by the 1880s, no man-made features were known to be present in the APE until the 1950s. In 1885, two sawmills were noted within a mile to the west and the southwest of the project location (P1071-5H and P1334-1H in Table 1), along a road running generally north-south across the vicinity (Fig. 6). As mentioned above, the creation of the San Bernardino Forest Reserve in 1893 gradually brought an end to commercial logging in the San Bernardino Mountains (Robinson 1989:96). Between the 1890s and the 1940s, no evidence of any human activities were observed within or adjacent to the APE (Figs. 7, 8; NETR Online 1938).

The early 1950s saw the coming of what is now Huston Drive and, at its end, the first facilities of the Huston Creek WWTP (Fig. 9; NETR Online 1952). The plant was established in 1952 with two clarifiers, two tanks, and associated screens, pumps, and filters in response to population growth in the Crestline area, especially after the creation of Lake Gregory in 1937-1938 and during the post-



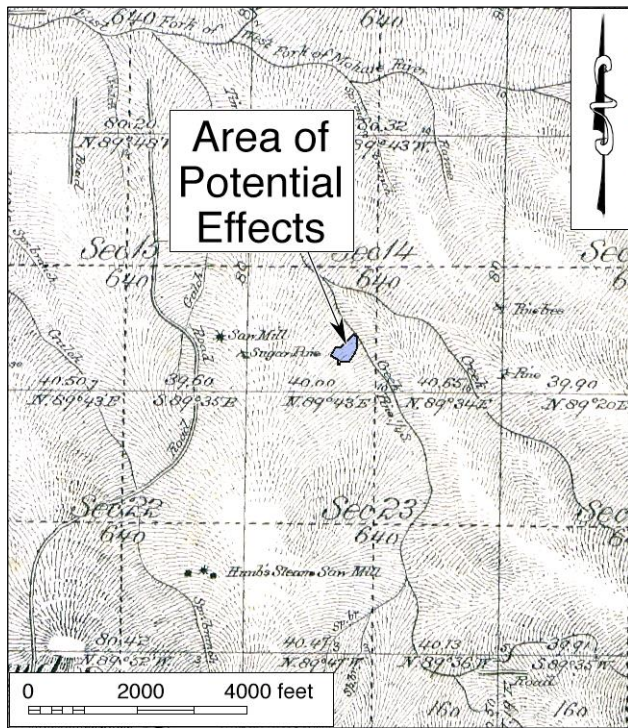


Figure 6. The APE and vicinity in 1885. (Source: GLO 1886)

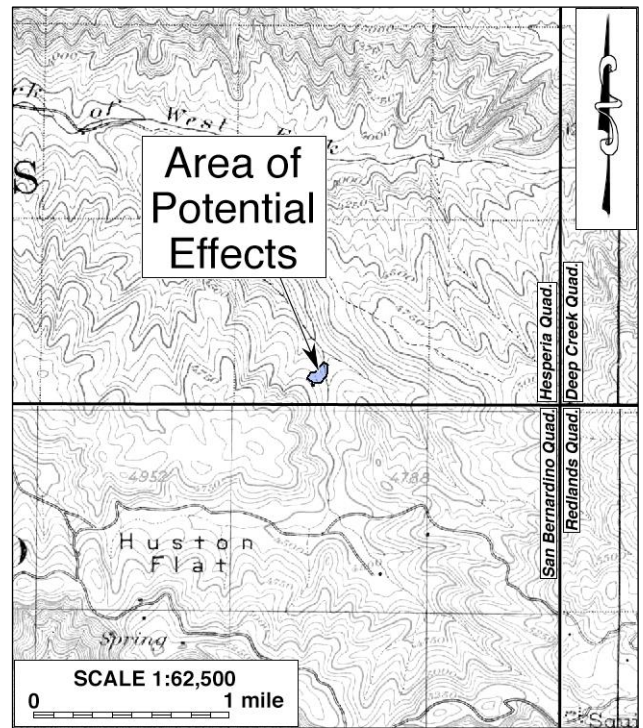


Figure 7. The APE and vicinity in 1893-1899. (Source: USGS 1901a; 1901b; 1902a; 1902b)

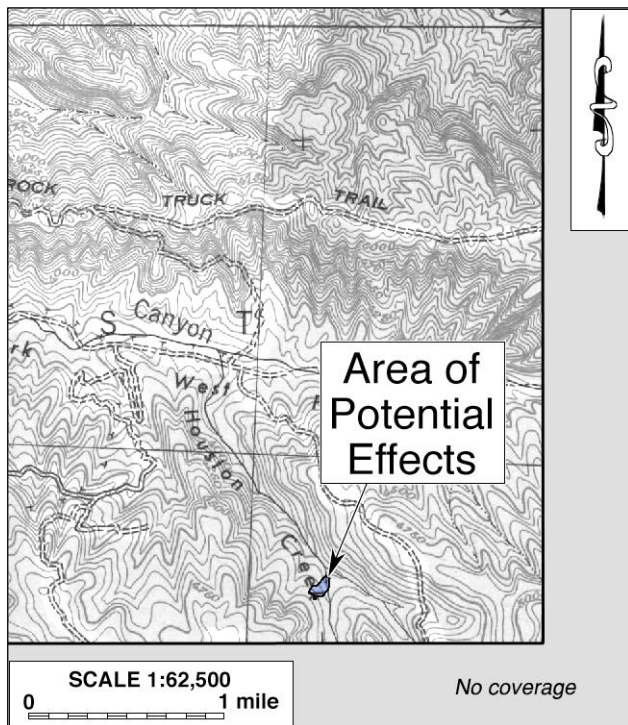


Figure 8. The APE and vicinity in 1940-1941. (Source: USGS 1942)

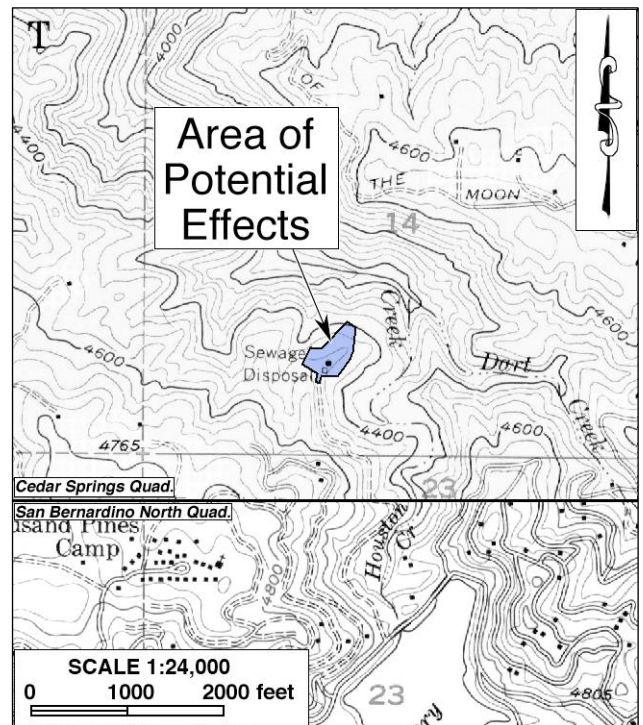


Figure 9. The APE and vicinity in 1952-1956. (Source: USGS 1954; 1956)

WWII boom (NETR Online 1938; 1952; CSD 2019). Between 1972 and 2001, the plant underwent a series of upgrading and expansions, as summarized by the CSD (2019:3):

- 1972 – New grit washer, gravity thickener, and chlorination building. Replacement of recirculation pumps. Retrofit of primary clarifiers with rotating sludge scrapers and new skimmer arms, and operations building.
- 1983 – Miscellaneous equipment replacement and improvements including sump pumps, instrumentation, controls, valves, and a blower. Construction of influent overflow structure and headworks bypass pipe.
- 1984 – New sludge dewatering building, equipment, and associated modifications.
- 1995 – New septage receiving structure.
- 1996 – New emergency storage reservoir tank.
- 2001 – New odor reduction unit.

A review of aerial photographs taken since 1952 confirms that while the overall layout of the Huston Creek WWTP has remained largely unchanged, almost all of the high-profile components of the plant, such as the buildings and structures, have been added after 1969 (NETR Online 1952-2016; Google Earth 1994-2018).

## **FIELD SURVEY**

During the field survey, it was verified that some of the early facilities of the Huston Creek WWTP, as identified in the aerial photographs, are still extant and functional today, most notably the existing primary clarifiers and the secondary clarifier. All of these facilities are of standard design and construction. The buildings at the plant today are mostly modern in appearance. One of the buildings, located next to the primary clarifiers and housing the headworks and grit removal operations, is evidently approaching 50 years of age, but the utilitarian design of the building exhibits no particular merit in architecture, engineering, or aesthetics (Fig. 4). Overall, the appearance of the plant as a whole is predominantly modern in character.

No archaeological features or artifacts more than 50 years of age were encountered during the field survey. Virtually the entire APE is occupied by the existing components of the plant and associated landscaping, paved driveways, and parking lots, where the ground surface has been extensively disturbed in the past.

## **NATIVE AMERICAN PARTICIPATION**

In response to CRM TECH's inquiry, the NAHC reported that the Sacred Lands File yielded positive results for Native American cultural resources in the vicinity of the APE but referred further inquiries to the Chemehuevi Indian Tribe and the San Manuel Band of Mission Indians. In addition, the NAHC recommended that other local Native American groups be contacted as well and provided a list of potential contacts in the region (see App. 2).

Upon receiving the NAHC's reply, CRM TECH sent written requests for comments to all five tribal organizations on the referral list, including the Chemehuevi Indian Tribe and the San Manuel Band of Mission Indians (see App. 2). For some of the tribes, the designated spokespersons on cultural resources issues were contacted in lieu of the individuals on the referral list, as recommended in the

past by the tribal government staff. In all, six tribal representatives with the five Native American groups were contacted during this study, as listed below:

- Matthew Leivas, Director, Chemehuevi Cultural Center;
- Donna Yocum, Chairperson, San Fernando Band of Mission Indians;
- Lee Clauss, Director of Cultural Resources, San Manuel Band of Mission Indians;
- Travis Armstrong, Tribal Historic Preservation Officer, Morongo Band of Mission Indians;
- Mark Cochrane, Co-Chairperson, Serrano Nation of Indians;
- Wayne Walker, Co-Chairperson, Serrano Nation of Indians.

As of this time, one tribal representative has responded in writing, and three have provided their input by telephone (see App. 2). Among them, Matthew Leivas of the Chemehuevi Indian Tribe stated that the tribe had no comment, while Donna Yocum of the San Fernando Band deferred to the San Manuel Band. Mark Cochrane of the Serrano Band requested notification of any cultural resources or human remains discovered during ground-disturbing activities, further consultation with the lead agencies, and a copy of this report for tribal review as a part of the consultation process.

Jessica Mauck, Cultural Resources Analyst for the San Manuel Band, stated by e-mail that the cultural resources referred to by the NAHC were in fact located some distance from the APE and would not be impacted by the proposed undertaking. Noting further that many cultural resources of significance to the Serrano people are known to be present in the San Bernardino Mountains, Ms. Mauck indicated that the San Manuel Band would seek further consultation with the lead agencies.

## **GEOARCHAEOLOGICAL ANALYSIS**

A recent geologic map identifies the surface formation in the project vicinity as *Mzsl*, namely “mixed granitic rocks of Silverwood Lake,” which dates to the Mesozoic Era and belong to the San Bernardino Mountains assemblage (Morton and Miller 2003). Within the APE boundaries, exploratory geotechnical borings for this undertaking revealed the presence of artificial fill materials up to the depth of 13 feet below surface (Adam et al. 2019:3). Beneath the fill materials, most of the borings encountered weathered granitic bedrock, although one of them penetrated a few feet of silty sand before reaching the bedrock (*ibid.*:3, App. A).

As noted above, the ground surface in virtually the entire APE has been disturbed previously by the construction of the Huston Creek WWTP since 1952, and the geotechnical borings suggest that the disturbances extended down to the bedrock. In light of the lack of any significant amount of undisturbed native soil between the surface and the bedrock, the subsurface sediments within the vertical APE are considered to be very low in sensitivity for potentially significant archaeological deposits of prehistoric or early historic origin.

## **MANAGEMENT CONSIDERATIONS**

The purpose of this study is to identify and evaluate any “historic properties” or “historical resources” that may exist within or adjacent to the APE. “Historic properties,” as defined by the Advisory Council on Historic Preservation, include “any prehistoric or historic district, site,

building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior” (36 CFR 800.16(l)). The eligibility for inclusion in the National Register is determined by applying the following criteria, developed by the National Park Service as per provision of the National Historic Preservation Act:

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and

- (a) that are associated with events that have made a significant contribution to the broad patterns of our history; or
- (b) that are associated with the lives of persons significant in our past; or
- (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- (d) that have yielded, or may be likely to yield, information important in prehistory or history. (36 CFR 60.4)

For CEQA-compliance considerations, the State of California’s Public Resources Code (PRC) establishes the definitions and criteria for “historical resources,” which require similar protection to what NHPA Section 106 mandates for “historic properties.” “Historical resources,” according to PRC §5020.1(j), “includes, but is not limited to, any object, building, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California.”

More specifically, CEQA guidelines state that the term “historical resources” applies to any such resources listed in or determined to be eligible for listing in the California Register of Historical Resources, included in a local register of historical resources, or determined to be historically significant by the lead agency (Title 14 CCR §15064.5(a)(1)-(3)). Regarding the proper criteria of historical significance, CEQA guidelines mandate that “generally a resource shall be considered by the lead agency to be ‘historically significant’ if the resource meets the criteria for listing on the California Register of Historical Resources” (Title 14 CCR §15064.5(a)(3)). A resource may be listed in the California Register if it meets any of the following criteria:

- (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.
- (4) Has yielded, or may be likely to yield, information important in prehistory or history. (PRC §5024.1(c))

In summary of the research results presented above, the APE coincides with the footprint of the Huston Creek WWTP, which was originally built in 1952, during the post-WWII boom that swept across the entire United States. Public works and infrastructure improvement in response to accelerated population growth and urban/suburban development were certainly part of a pattern of events in history that helped shape American life in the second half of the 20th century. However, as



one of many similar projects in the region, this modest facility does not demonstrate a unique or particularly close association with that historic theme.

Throughout the course of this study, no persons or specific events of recognized historic significance have been identified in close association with the Huston Creek WWTP. Utilitarian in design and construction, none of the original or early components of the plant represents an important example of its property type or method of construction, nor are they recognized to be the examples of works by a prominent designer, builder, or engineer or for any other architectural, engineering, or aesthetic merits. As common infrastructure features from the late historic period, they hold little potential for any important historical or archaeological data.

More importantly, the Huston Creek WWTP was upgraded and expanded repeatedly in various years between 1972 and 2001, and almost all of the high-profile components of the plant today, such as the buildings and structures, are modern additions. As a result, the overall appearance of the plant as a whole is also predominantly modern in character. Due to the lack of integrity to relate to the historic period, the Huston Creek WWTP is no longer a potential candidate for listing in the National Register of Historic Places or the California Register of Historical Resources. Therefore, it does not constitute a potential “historic property”/“historical resource,” and requires no further consideration in the Section 106- and CEQA-compliance processes.

## **CONCLUSION AND RECOMMENDATIONS**

Section 106 of the National Historic Preservation Act mandates that federal agencies take into account the effects of their undertakings on historic properties and seek ways to avoid, minimize, or mitigate any adverse effects on such properties (36 CFR 800.1(a)). Similarly, CEQA establishes that a project that may cause a substantial adverse change in the significance of a “historical resource” is a project that may have a significant effect on the environment (PRC §21084.1). “Substantial adverse change,” according to PRC §5020.1(q), “means demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired.”

In conclusion, the Huston Creek WWTP is the only feature identified in the APE that dates originally to the historic period, and it has been found not to constitute a potential “historic property”/“historical resource” under Section 106 and CEQA provisions. No other properties of historical or prehistoric origin were encountered within or adjacent to the APE during this study, and the subsurface sediments within the vertical extent of the APE, consisting mostly of artificial fill and granitic bedrock, appear to be very low in sensitivity for potentially significant archaeological remains.

Based on these findings, and pursuant to 36 CFR 800.4(d)(1) and Calif. PRC §21084.1, CRM TECH presents the following recommendations to the CSD and the SWRCB:

- No “historic properties” or “historical resources” are present within or adjacent to the APE, and thus no “historic properties” or “historical resources” will be affected by the proposed undertaking.
- No further cultural resources investigation will be necessary for the undertaking unless construction plans undergo such changes as to include areas not covered by this study.

- If buried cultural materials are inadvertently discovered during the undertaking, all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the find.

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2005 Cultural Resources Survey of Approximately 97 Acres within the Crestline Sanitation Property for the Natural Resources Conservation Service.

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1902b Map: Hesperia, Calif. (15', 1:62,500); surveyed in 1898-1999.

1942 Map: Hesperia, Calif. (15', 1:62,500); aerial photographs taken in 1940-1941.

1954 Map: San Bernardino North, Calif. (7.5', 1:24,000); aerial photographs taken in 1952, field-checked in 1953-1954.

1956 Map: Cedar Springs, Calif. (7.5', 1:24,000); aerial photographs taken in 1952, field-checked in 1956.

1969 Map: San Bernardino, Calif. (1:250,000); 1958 edition revised.

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## **APPENDIX 1 PERSONNEL QUALIFICATIONS**

### **PRINCIPAL INVESTIGATOR/HISTORIAN Bai “Tom” Tang, M.A.**

#### **Education**

- 1988-1993 Graduate Program in Public History/Historic Preservation, UC Riverside.  
1987 M.A., American History, Yale University, New Haven, Connecticut.  
1982 B.A., History, Northwestern University, Xi’an, China.
- 2000 “Introduction to Section 106 Review,” presented by the Advisory Council on Historic Preservation and the University of Nevada, Reno.  
1994 “Assessing the Significance of Historic Archaeological Sites,” presented by the Historic Preservation Program, University of Nevada, Reno.

#### **Professional Experience**

- 2002- Principal Investigator, CRM TECH, Riverside/Colton, California.  
1993-2002 Project Historian/Architectural Historian, CRM TECH, Riverside, California.  
1993-1997 Project Historian, Greenwood and Associates, Pacific Palisades, California.  
1991-1993 Project Historian, Archaeological Research Unit, UC Riverside.  
1990 Intern Researcher, California State Office of Historic Preservation, Sacramento.  
1990-1992 Teaching Assistant, History of Modern World, UC Riverside.  
1988-1993 Research Assistant, American Social History, UC Riverside.  
1985-1988 Research Assistant, Modern Chinese History, Yale University.  
1985-1986 Teaching Assistant, Modern Chinese History, Yale University.  
1982-1985 Lecturer, History, Xi’an Foreign Languages Institute, Xi’an, China.

#### **Cultural Resources Management Reports**

Preliminary Analyses and Recommendations Regarding California’s Cultural Resources Inventory System (with Special Reference to Condition 14 of NPS 1990 Program Review Report). California State Office of Historic Preservation working paper, Sacramento, September 1990.

Numerous cultural resources management reports with the Archaeological Research Unit, Greenwood and Associates, and CRM TECH, since October 1991.

## **PRINCIPAL INVESTIGATOR/ARCHAEOLOGIST**

**Michael Hogan, Ph.D., RPA\***

### **Education**

- 1991 Ph.D., Anthropology, University of California, Riverside.
- 1981 B.S., Anthropology, University of California, Riverside; with honors.
- 1980-1981 Education Abroad Program, Lima, Peru.
  
- 2002 Section 106—National Historic Preservation Act: Federal Law at the Local Level. UCLA Extension Course #888.
- 2002 “Recognizing Historic Artifacts,” workshop presented by Richard Norwood, Historical Archaeologist.
- 2002 “Wending Your Way through the Regulatory Maze,” symposium presented by the Association of Environmental Professionals.
- 1992 “Southern California Ceramics Workshop,” presented by Jerry Schaefer.
- 1992 “Historic Artifact Workshop,” presented by Anne Duffield-Stoll.

### **Professional Experience**

- 2002- Principal Investigator, CRM TECH, Riverside/Colton, California.
- 1999-2002 Project Archaeologist/Field Director, CRM TECH, Riverside.
- 1996-1998 Project Director and Ethnographer, Statistical Research, Inc., Redlands.
- 1992-1998 Assistant Research Anthropologist, University of California, Riverside
- 1992-1995 Project Director, Archaeological Research Unit, U. C. Riverside.
- 1993-1994 Adjunct Professor, Riverside Community College, Mt. San Jacinto College, U.C. Riverside, Chapman University, and San Bernardino Valley College.
- 1991-1992 Crew Chief, Archaeological Research Unit, U. C. Riverside.
- 1984-1998 Archaeological Technician, Field Director, and Project Director for various southern California cultural resources management firms.

### **Research Interests**

Cultural Resource Management, Southern Californian Archaeology, Settlement and Exchange Patterns, Specialization and Stratification, Culture Change, Native American Culture, Cultural Diversity.

### **Cultural Resources Management Reports**

Author and co-author of, contributor to, and principal investigator for numerous cultural resources management study reports since 1986.

### **Memberships**

\* Register of Professional Archaeologists; Society for American Archaeology; Society for California Archaeology; Pacific Coast Archaeological Society; Coachella Valley Archaeological Society.

**PROJECT ARCHAEOLOGIST/REPORT WRITER**  
**Deirdre Encarnación, M.A.**

**Education**

- 2003 M.A., Anthropology, San Diego State University, California.
- 2000 B.A., Anthropology, minor in Biology, with honors; San Diego State University, California.
- 1993 A.A., Communications, Nassau Community College, Garden City, N.Y.
  
- 2001 Archaeological Field School, San Diego State University.
- 2000 Archaeological Field School, San Diego State University.

**Professional Experience**

- 2004- Project Archaeologist/Report Writer, CRM TECH, Riverside/Colton, California.
- 2001-2003 Part-time Lecturer, San Diego State University, California.
- 2001 Research Assistant for Dr. Lynn Gamble, San Diego State University.
- 2001 Archaeological Collection Catalog, SDSU Foundation.

**PROJECT ARCHAEOLOGIST/FIELD DIRECTOR**  
**Daniel Ballester, M.S.**

**Education**

- 2013 M.S., Geographic Information System (GIS), University of Redlands, California.
- 1998 B.A., Anthropology, California State University, San Bernardino.
- 1997 Archaeological Field School, University of Las Vegas and University of California, Riverside.
- 1994 University of Puerto Rico, Rio Piedras, Puerto Rico.
  
- 2007 Certificate in Geographic Information Systems (GIS), California State University, San Bernardino.
- 2002 “Historic Archaeology Workshop,” presented by Richard Norwood, Base Archaeologist, Edwards Air Force Base; presented at CRM TECH, Riverside, California.

**Professional Experience**

- 2002- Field Director/GIS Specialist, CRM TECH, Riverside/Colton, California.
- 1999-2002 Project Archaeologist, CRM TECH, Riverside, California.
- 1998-1999 Field Crew, K.E.A. Environmental, San Diego, California.
- 1998 Field Crew, A.S.M. Affiliates, Encinitas, California.
- 1998 Field Crew, Archaeological Research Unit, University of California, Riverside.

## **PROJECT ARCHAEOLOGIST**

### **Ben Kerridge, M.A.**

#### **Education**

2014 Archaeological Field School, Institute for Field Research, Kephallenia, Greece.  
2010 M.A., Anthropology, California State University, Fullerton.  
2009 Project Management Training, Project Management Institute/CH2M HILL, Santa Ana, California.  
2004 B.A., Anthropology, California State University, Fullerton.

#### **Professional Experience**

2015- Project Archaeologist/Report Writer, CRM TECH, Colton, California.  
2015 Teaching Assistant, Institute for Field Research, Kephallenia, Greece.  
2009-2014 Publications Delivery Manager, CH2M HILL, Santa Ana, California.  
2010- Naturalist, Newport Bay Conservancy, Newport Beach, California.  
2006-2009 Technical Publishing Specialist, CH2M HILL, Santa Ana, California.

#### **Papers Presented**

- Geomorphological Survey of Tracts T126–T151 to Support Archaeological Shoreline Research Project. Institute for Field Research, Kephallenia, Greece, 2014.
- The Uncanny Valley of the Shadow of Modernity: A Re-examination of Anthropological Approaches to Christianity. Graduate Thesis, California State University, Fullerton, 2010.
- Ethnographic Endeavors into the World of Counterstrike. 74th Annual Conference of the Southwestern Anthropological Association, 2003.

#### **Cultural Resources Management Reports**

Co-author and contributor to numerous cultural resources management reports since 2013.

#### **Memberships**

Society for California Archaeology; Pacific Coast Archaeological Society.

**APPENDIX 2**

**CORRESPONDENCE WITH  
NATIVE AMERICAN REPRESENTATIVES\***

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\* Six local Native American representatives were contacted; a sample letter is included in this report.

## SACRED LANDS FILE & NATIVE AMERICAN CONTACTS LIST REQUEST

### NATIVE AMERICAN HERITAGE COMMISSION

915 Capitol Mall, RM 364

Sacramento, CA 95814

(916) 653-4082

(916) 657-5390 (fax)

nahc@pacbell.net

**Project:** Proposed Huston Creek Wastewater Treatment Plant Expansion Project (CRM TECH No. 3504)

**County:** San Bernardino

**USGS Quadrangle Name:** Harrison Mountain, Lake Arrowhead, San Bernardino North, and Silverwood Lake, Calif.

**Township** 2 North **Range** 4 West **SB BM; Section(s):** 14

**Company/Firm/Agency:** CRM TECH

**Contact Person:** Nina Gallardo

**Street Address:** 1016 E. Cooley Drive, Suite A/B

**City:** Colton, CA **Zip:** 92324

**Phone:** (909) 824-6400 **Fax:** (909) 824-6405

**Email:** ngallardo@crmtech.us

**Project Description:** The primary component of the project is to expand the existing Huston Creek Wastewater Treatment Plant. The Area of Potential Effects (APE), within the existing plant, is located at the northern terminus of Houston Drive and north of Lake Drive, in the community of Crestline, San Bernardino County, California.

*June 12, 2019*

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](mailto:nahc@nahc.ca.gov)  
Website: <http://www.nahc.ca.gov>  
Twitter: @CA\_NAHC



June 25, 2019

Nina Gallardo  
CRM Tech

VIA Email to: [ngallardo@crmtech.us](mailto:ngallardo@crmtech.us)

RE: Proposed Huston Creek Wastewater Treatment Plant Expansion Project, San Bernardino County

Dear Ms. Gallardo:

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

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

If you receive notification of change of addresses and phone numbers from tribes, please notify 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: [steven.quinn@nahc.ca.gov](mailto:steven.quinn@nahc.ca.gov).

Sincerely,

A handwritten signature in blue ink that reads "Steven Quinn".

Steven Quinn  
Associate Governmental Program Analyst

Attachment

**Native American Heritage Commission  
Native American Contact List  
San Bernardino County  
6/25/2019**

**Chemehuevi Indian Reservation**

Charles Wood, Chairperson  
P.O. Box 1976 1990 Palo Verde Chemehuevi  
Drive  
Havasu Lake, CA, 92363  
Phone: (760) 858 - 4219  
Fax: (760) 858-5400  
chairman@cit-nsn.gov

***Serrano Nation of Mission Indians***

Wayne Walker, Co-Chairperson  
P. O. Box 343  
Patton, CA, 92369  
Phone: (253) 370 - 0167  
serranonation1@gmail.com

***Morongo Band of Mission Indians***

Denisa Torres, Cultural Resources  
Manager  
12700 Pumarra Road  
Banning, CA, 92220  
Phone: (951) 849 - 8807  
Fax: (951) 922-8146  
dtorres@morongo-nsn.gov

**Serrano Nation of Mission Indians**

Mark Cochrane, Co-Chairperson  
P. O. Box 343  
Patton, CA, 92369  
Phone: (909) 528 - 9032  
serranonation1@gmail.com

***Morongo Band of Mission Indians***

Robert Martin, Chairperson  
12700 Pumarra Road  
Banning, CA, 92220  
Phone: (951) 849 - 8807  
Fax: (951) 922-8146  
dtorres@morongo-nsn.gov

***San Fernando Band of Mission Indians***

Donna Yocum, Chairperson  
P.O. Box 221838  
Newhall, CA, 91322  
Phone: (503) 539 - 0933  
Fax: (503) 574-3308  
ddyocum@comcast.net

***San Manuel Band of Mission Indians***

Lee Clauss, Director of Cultural  
Resources  
26569 Community Center Drive Serrano  
Highland, CA, 92346  
Phone: (909) 864 - 8933  
Fax: (909) 864-3370  
lclauss@sanmanuel-nsn.gov

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

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Proposed Huston Creek Wastewater Treatment Plant Expansion Project, San Bernardino County.



**From:** Nina Gallardo <ngallardo@crmtech.us>  
**Sent:** Friday, June 28, 2019 2:35 PM  
**To:** Lee Clauss (lclauss@sanmanuel-nsn.gov)  
**Cc:** 'Jessica Mauck'  
**Subject:** Information Regarding the Positive NAHC Response for the Proposed Huston Creek Wastewater Treatment Plant Expansion Project in the Community of Crestline (CRM TECH #3504)

Hello Ms. Clauss,

I'm emailing to inform you that CRM TECH will be conducting a cultural resources study for the proposed Huston Creek Wastewater Treatment Plant Expansion Project in the community of Crestline, San Bernardino County (CRM TECH #3504). We have received the Native American Heritage Commission (NAHC) SLF Response and NA Contact List. In the letter dated June 25, 2019, the NAHC reports that Sacred Lands File indicated there were Native American cultural resources present within the APE and recommends that the Chemehuevi Indian Reservation and the San Manuel Band of Mission Indians be contacted for further information (see attached).

I'm contacting you to see if the San Manuel Band of Mission Indians has any specific information regarding any cultural sites located within the APE. I'm also attaching the NA scoping letter with the NAHC response letter and the APE location map. We would appreciate any information that the tribe can provide to us. Please feel free to call or email us with any questions or additional information.

Thanks for your time and input on this project.

Nina Gallardo  
Project Archaeologist/Native American liaison  
CRM TECH

---

**From:** Nina Gallardo <ngallardo@crmtech.us>  
**Sent:** Friday, June 28, 2019 2:39 PM  
**To:** cultural@cit-nsn.gov  
**Cc:** chairman@cit-nsn.gov  
**Subject:** Information Regarding the Positive NAHC Response for the Proposed Huston Creek Wastewater Treatment Plant Expansion Project in the Community of Crestline (CRM TECH #3504)

Hello Mr. Leivas,

I'm emailing to inform you that CRM TECH will be conducting a cultural resources study for the proposed Huston Creek Wastewater Treatment Plant Expansion Project in the community of Crestline, San Bernardino County (CRM TECH #3504). We have received the Native American Heritage Commission (NAHC) SLF Response and NA Contact List. In the letter dated June 25, 2019, the NAHC reports that Sacred Lands File indicated there were Native American cultural resources present within the APE and recommends that the Chemehuevi Indian Reservation and the San Manuel Band of Mission Indians be contacted for further information (see attached).

I'm contacting you to see if the Chemehuevi Indian Reservation has any specific information regarding any cultural sites located within the APE. I'm also attaching the NA scoping letter with the NAHC

response letter and the APE location map. We would appreciate any information that the tribe can provide to us. Please feel free to call or email us with any questions or additional information.

Thanks for your time and input on this project.

Nina Gallardo  
Project Archaeologist/Native American liaison  
CRM TECH

---

June 28, 2019

Travis Armstrong, Tribal Historic Preservation Officer  
Morongo Band of Mission Indians  
12700 Pumarra Road  
Banning, CA 92220

RE: Proposed Huston Creek Wastewater Treatment Plant Expansion Project  
Four Acres in the Community of Crestline, San Bernardino County, California  
CRM TECH Contract #3504

Dear Mr. Armstrong:

I am writing to bring your attention to an ongoing CEQA-Plus study for the proposed project referenced above, which entails the expansion of the existing Huston Creek Wastewater Treatment Plant, including the construction of a new sludge building and a new primary clarifier. The Area of Potential Effects (APE), within the existing plant, is located at the northern terminus of Huston Drive and north of Lake Drive, in the community of Crestline, San Bernardino County, California. The accompanying map, based on USGS Harrison Mountain, Lake Arrowhead, San Bernardino North, and Silverwood Lake, Calif., 7.5' quadrangles, depicts the location of the APE in Section 14, T2N R4W, SBBM.

In a letter dated June 25, 2019, the Native American Heritage Commission states that the Sacred Lands File indicated there were Native American cultural resources present within the APE and recommends that the Chemehuevi Indian Reservation and the San Manuel Band of Mission Indians be contacted for further information (see attached). Therefore, as part of the cultural resources study for this project, I am writing to request your input on potential Native American cultural resources in or near the APE.

Please respond at your earliest convenience if you have any specific knowledge of sacred/religious sites or other sites of Native American traditional cultural value in or near the APE, or any other information to consider during the cultural resources investigations. Any information or concerns may be forwarded to CRM TECH by telephone, e-mail, facsimile, or standard mail. Requests for documentation or information we cannot provide will be forwarded to our client and/or the lead agencies, namely the Crestline Sanitation District and State Water Resource Control Board.

We would also like to clarify that, as the cultural resources consultant for the project, CRM TECH is not involved in the AB 52-compliance process or in government-to-government consultations. The purpose of this letter is to seek any information that you may have to help us determine if there are cultural resources in or near the APE that we should be aware of and to help us assess the sensitivity of the APE. Thank you for your time and effort in addressing this important matter.

Respectfully,

Nina Gallardo  
Project Archaeologist/Native American liaison  
CRM TECH  
Email: ngallardo@crmtech.us

Encl.: NAHC response letter and APE location map

---

**From:** Jessica Mauck <JMauck@sanmanuel-nsn.gov>  
**Sent:** Monday 7/1/2019 5:54 PM  
**To:** ngallardo@crmtech.us  
**Subject:** RE: Information Regarding the Positive NAHC Response for the Proposed Huston Creek Wastewater Treatment Plant Expansion Project in the Community of Crestline (CRM TECH #3504)

Hi Nina,

Thank you for contacting the San Manuel Band of Mission Indians (SMBMI) regarding the above referenced project. SMBMI appreciates the opportunity to review the project documentation, which was received by our Cultural Resources Management Department on 28 June 2019. Though the SLF search at the NAHC came back positive, the proposed project will not have an impact on the SLF, as it is actually a good distance from the project area. In a recent conversation with NAHC representatives, we learned a bit more about their decision-making process and realized that we are likely to continue receiving positive results for projects that share a quadrangle with the project area, even if the project does not overlap with the SLF. However, while we can definitively say that this project will not impact an SLF that SMBMI has on file with the NAHC, we do not have enough archaeological data for the Crestline area to assess whether or not a resource will be impacted. Ethnographically, this area lies between the villages of Apuimabit (Arrowhead Springs) to the south and Guapiabit (Summit Valley) to the north – the only other placename on record is Mamat, which refers to the region around Lake Arrowhead (potentially including Crestline). The San Bernardino Mountains are home to many significant Serrano resources, and SMBMI looks forward to consulting on this project with the Lead Agency.

Sincerely,

Jessica Mauck  
CULTURAL RESOURCES ANALYST  
O: (909) 864-8933 x3249  
M: (909) 725-9054  
26569 Community Center Drive  
Highland California 92346

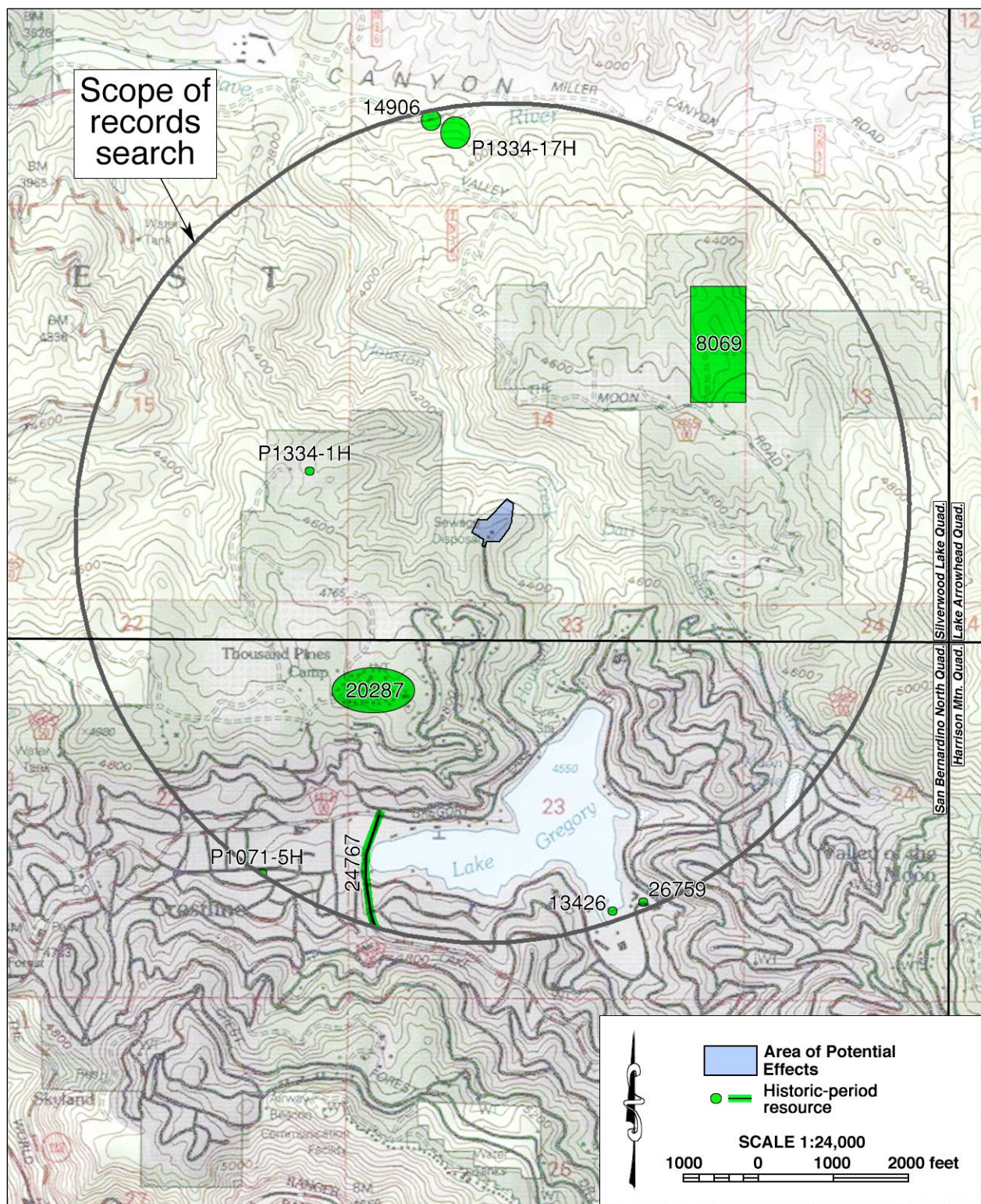
## TELEPHONE LOG

<b>Name</b>	<b>Tribe/Affiliation</b>	<b>Telephone Contacts</b>	<b>Comments</b>
Matthew Leivas, Director of the Chemehuevi Cultural Center	Chemehuevi Indian Tribe	9:05 am, July 16, 2019	The tribe has no comments at this time.
Travis Armstrong, Tribal Historic Preservation Officer	Morongo Band of Mission Indians	9:18 am, July 16, 2019 8:26 am, July 24, 2019	Left voice messages; no response to date.
Donna Yocum, Chairperson	San Fernando Band of Mission Indians	9:12 am, July 16, 2019	The tribe defers to the San Manuel Band of Mission Indians.
Lee Clauss, Director of Cultural Resources	San Manuel Band of Mission Indians	None	Jessica Mauck, Cultural Resources Analyst, responded on behalf of Ms. Clauss by e-mail on July 1, 2019 (copy attached).
Mark Cochrane, Co- Chairperson	Serrano Nation of Indians	9:16 am, July 16, 2019; 9:25 am, July 19, 2019	Mr. Cochrane made the following requests: (1) notification of any cultural resources or human remains discovered during ground-disturbing activities; (2) further consultation with the lead agencies; and (3) a copy of the final report.
Wayne Walker, Co- Chairperson	Serrano Nation of Indians	9:20 am, July 16, 2019	Mark Cochrane responded on behalf of the tribe (see above).

**APPENDIX 3**

**CULTURAL RESOURCES RECORDED  
NEAR THE APE**

**(Confidential)**



## **Appendix D**

### **Energy Analysis**

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**Crestline Sanitation Huston Creek  
Wastewater Treatment Plant  
(WWTP) Dewatering Building and  
Primary Clarifier Project**

**ENERGY ANALYSIS**

**COUNTY OF SAN BERNARDINO**

PREPARED BY:

Haseeb Qureshi  
hqureshi@urbanxroads.com  
(949) 336-5987

Alyssa Tamase  
atamase@urbanxroads.com  
(949) 336-5988

SEPTEMBER 19, 2019



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## **LIST OF ABBREVIATED TERMS**

(1)	Reference
AQIA	Air Quality Impact Analysis
ARB	Air Resources Board
CalEEMod	California Emissions Estimator Model
CARB	California Air Resources Board
CEC	California Energy Commission
CPUC	California Public Utilities Commission
COUNTY	County of San Bernardino
EIR	Environmental Impact Report
EMFAC	Emissions Factor
EVs	Electric Vehicles
FERC	Federal Energy Regulatory Commission
GPA	General Plan Amendment
GWh	Gigawatt Hour
HHD	Heavy-Heavy Duty
HP-HR-GAL	Horsepower-Hour Per Gallon
ISO	Independent Service Operator
ISTEA	Intermodal Surface Transportation Efficiency Act
ITE	Institute of Transportation Engineers
LHD	Light-Heavy Duty
MHD	Medium-Heavy Duty
MPG	Miles Per Gallon
MPO	Metropolitan Planning Organization
Project	Crestline Sanitation Huston Creek Wastewater Treatment Plant (WWTP) Dewatering Building and Primary Clarifier Project
SCE	Southern California Edison
SF	Square Feet
SoCalGas	Southern California Gas
SP	Specific Plan
TEA-21	Transportation Equity Act for the 21 <sup>st</sup> Century
VMT	Vehicle Miles Traveled
WWTP	Wastewater Treatment Plant

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## EXECUTIVE SUMMARY

### ES.1 SUMMARY OF FINDINGS

The results of this *Crestline Sanitation Huston Creek Wastewater Treatment Plant (WWTP) Dewatering Building and Primary Clarifier Project Energy Analysis* is summarized below based on the significance criteria in Section 3 of this report consistent with Appendix G of the California Environmental Quality Act (CEQA) Guidelines (1). Table ES-1 shows the findings of significance for potential energy impacts under CEQA.

**TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS**

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Energy Impact #1: Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.	5.0	<i>Less Than Significant</i>	<i>n/a</i>
Energy Impact #2: Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.	5.0	<i>Less Than Significant</i>	<i>n/a</i>

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# **1 INTRODUCTION**

This report presents the results of the energy analysis prepared by Urban Crossroads, Inc., for the proposed Crestline Sanitation Huston Creek Wastewater Treatment Plant (WWTP) Dewatering Building and Primary Clarifier Project. The purpose of this report is to ensure that energy implication is considered by the Crestline Sanitation District, as the lead agency, and to quantify anticipated energy usage associated with construction of the proposed Project, determine if the usage amounts are efficient, typical, or wasteful for the land use type, and to emphasize avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy.

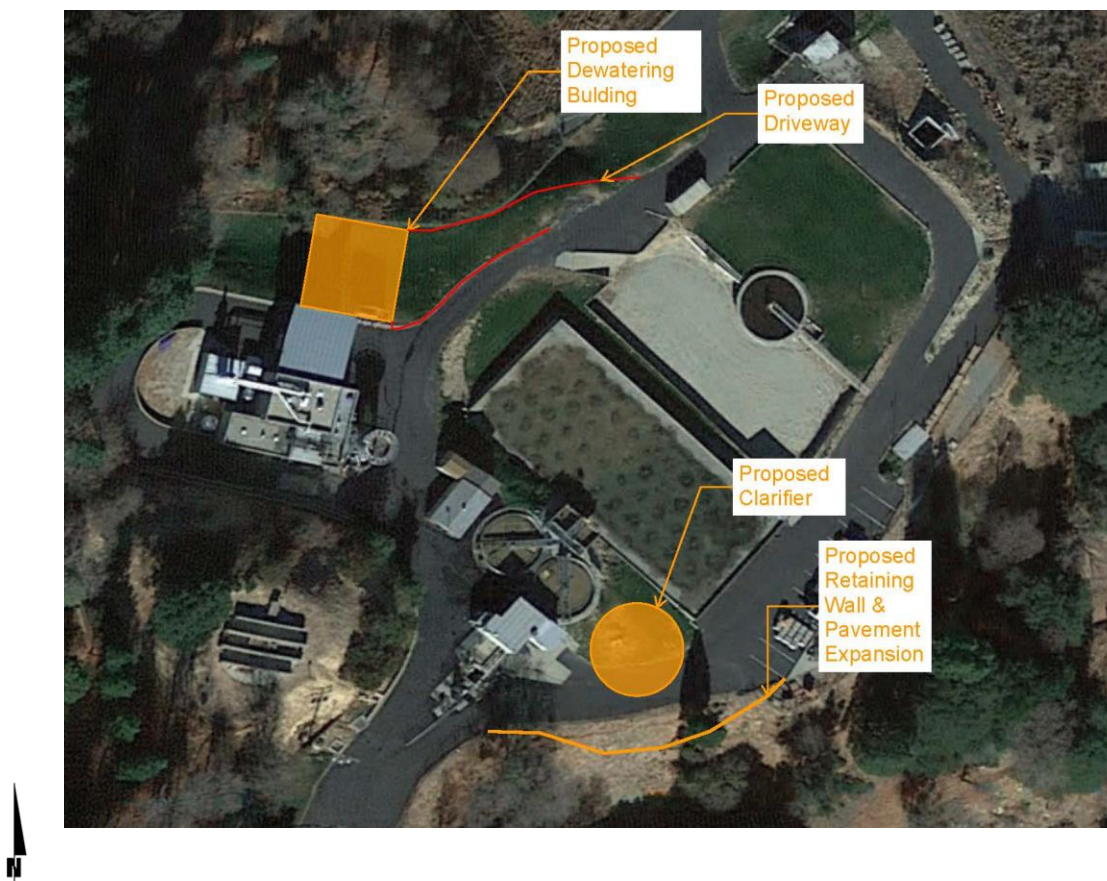
## **1.1 SITE LOCATION**

The proposed Crestline Sanitation Huston Creek Wastewater Treatment Plant (WWTP) Dewatering Building and Primary Clarifier Project is located within the census-designated community of Crestline, in the County of San Bernardino.

## **1.2 PROJECT DESCRIPTION**

The Project proposes to upgrade the existing wastewater treatment plant with the addition of a primary clarifier, backup generator, trickling filter recirculation pumps, and a sludge dewatering building, as shown on Exhibit 1-A. The Project is anticipated to be constructed in a single phase by the year 2022.

**EXHIBIT 1-A: PROJECT CONCEPT SKETCH**



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## **2 EXISTING CONDITIONS**

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

### **2.1 OVERVIEW**

The most recent data for California's estimated annual energy use is from 2019 and included:

- Approximately 7,881 trillion British Thermal Unit (BTU) of energy was consumed; (2);
- Approximately 2,115 billion cubic feet of natural gas (2); and
- Approximately 15.8 billion gallons of transportation fuel (for the year 2017) (3)

The most recent data provided by the United States Energy Information Administration (EIA) for energy use in California by demand sector is from 2017 and is reported as follows:

- Approximately 40.3 percent transportation;
- Approximately 23.1 percent industrial;
- Approximately 18.0 percent residential; and
- Approximately 18.7 percent commercial (4)

In 2018, total system electric generation for California was 285,488 gigawatt-hours (GWh). California's massive electricity in-state generation system generated approximately 194,842 GWh which accounted for approximately 68% of the electricity it uses; the rest was imported from the Pacific Northwest (14%) and the U.S. Southwest (18%) (5). Natural gas is the main source for electricity generation at 47% of the total in-state electric generation system power as shown in Table 2-1.

**TABLE 2-1: TOTAL ELECTRICITY SYSTEM POWER (CALIFORNIA 2018)**

Fuel Type	California In-State Generation (GWh)	Percent of California In-State Generation	Northwest Imports (GWh)	Southwest Imports (GWh)	California Power Mix (GWh)	Percent California Power Mix
Coal	294	0.15%	399	8,740	9,433	3.30%
Large Hydro	22,096	11.34%	7,418	985	30,499	10.68%
Natural Gas	90,691	46.54%	49	8,904	99,644	34.91%
Nuclear	18,268	9.38%	0	7,573	25,841	9.05%
Oil	35	0.02%	0	0	35	0.01%
Other	430	0.22%	0	9	439	0.15%
Renewables	63,028	32.35%	14,074	12,400	89,502	31.36%
Biomass	5,909	3.03%	772	26	6,707	2.35%
Geothermal	11,528	5.92%	171	1,269	12,968	4.54%
Small Hydro	4,248	2.18%	334	1	4,583	1.61%
Solar	27,265	13.99%	174	5,094	32,533	11.40%
Wind	14,078	7.23%	12,623	6,010	32,711	11.46%
Unspecified Sources of Power	N/A	N/A	17,576	12,519	30,095	10.54%
<b>Total</b>	<b>194,842</b>	<b>100%</b>	<b>39,517</b>	<b>51,130</b>	<b>285,488</b>	<b>100%</b>

Source: [https://www.energy.ca.gov/almanac/electricity\\_data/total\\_system\\_power.html](https://www.energy.ca.gov/almanac/electricity_data/total_system_power.html)

A summary of, and context for energy consumption and energy demands within the State is presented in “U.S. Energy Information Administration, California State Profile and Energy Estimates, Quick Facts” excerpted below:

- California was the fourth-largest producer of crude oil among the 50 states in 2017, after Texas, North Dakota, and Alaska, and, as of January 2018, third in oil refining capacity after Texas and Louisiana.
- California is the largest consumer of jet fuel among the 50 states and accounted for one-fifth of the nation’s jet fuel consumption in 2016.
- California's total energy consumption is second-highest in the nation, but, in 2016, the state's per capita energy consumption ranked 48th, due in part to its mild climate and its energy efficiency programs.
- In 2017, California ranked second in the nation in conventional hydroelectric generation and first as a producer of electricity from solar, geothermal, and biomass resources.
- In 2017, solar PV and solar thermal installations provided about 16% of California’s net electricity generation (6).

As indicated above, California is one of the nation’s leading energy-producing states, and California per capita energy use is among the nation’s most efficient. Given the nature of the proposed Project being industrial uses, the remainder of this discussion will focus on the three

sources of energy that are most relevant to the project—namely, electricity, natural gas, and transportation fuel for vehicle trips associated with industrial uses planned for the Project.

## **2.2 ELECTRICITY**

The Southern California region's electricity reliability has been of concern for the past several years due to the planned retirement of aging facilities that depend upon once-through cooling technologies, as well as the June 2013 retirement of the San Onofre Nuclear Generating Station (San Onofre). While the once-through cooling phase-out has been ongoing since the May 2010 adoption of the State Water Resources Control Board's once-through cooling policy, the retirement of San Onofre complicated the situation. California ISO studies had revealed the extent to which the Southern California Air Basin (SCAB) and the San Diego Air Basin (SDAB) region were vulnerable to low-voltage and post-transient voltage instability concerns. A preliminary plan to address these issues was detailed in the 2013 Integrative Energy Policy Report (2013 IEPR) after a collaborative process with other energy agencies, utilities, and air districts (7). If the resource development outlined in the preliminary plan continues as detailed, reliability in Southern California would likely be assured; however, tight resource margins have led energy agencies and the ARB to develop a contingency plan. This contingency plan was discussed at a public workshop in Los Angeles on August 20, 2014 and is detailed within this Section (8).

Electricity is provided to the Project by Southern California Edison (SCE). SCE provides electric power to more than 15 million persons in 15 counties and in 180 incorporated cities, within a service area encompassing approximately 50,000 square miles. SCE derives electricity from varied energy resources including: fossil fuels, hydroelectric generators, nuclear power plants, geothermal power plants, solar power generation, and wind farms. SCE also purchases from independent power producers and utilities, including out-of-state suppliers (9).

California's electricity industry is an organization of traditional utilities, private generating companies, and state agencies, each with a variety of roles and responsibilities to ensure that electrical power is provided to consumers. The California Independent Service Operator ("ISO") is a nonprofit public benefit corporation and is the impartial operator of the State's wholesale power grid and is charged with maintaining grid reliability, and to direct uninterrupted electrical energy supplies to California's homes and communities. While utilities [such as SCE] still own transmission assets, the ISO routes electrical power along these assets, maximizing the use of the transmission system and its power generation resources. The ISO matches buyers and sellers of electricity to ensure that sufficient power is available to meet demand. To these ends, every five minutes the ISO forecasts electrical demands, accounts for operating reserves, and assigns the lowest cost power plant unit to meet demands while ensuring adequate system transmission capacities and capabilities (10).

Part of the ISO's charge is to plan and coordinate grid enhancements to ensure that electrical power is provided to California consumers. To this end, transmission owners (investor-owned utilities such as SCE) file annual transmission expansion/modification plans to accommodate the State's growing electrical needs. The ISO reviews and either approves or denies the proposed additions. In addition, and perhaps most importantly, the ISO works with other areas in the western United States electrical grid to ensure that adequate power supplies are available to the

State. In this manner, continuing reliable and affordable electrical power is assured to existing and new consumers throughout the State.

Table 2-2 identifies SCE's specific proportional shares of electricity sources in 2017. As indicated in Table 2-2, the 2017 SCE Power Mix has renewable energy at 32% of the overall energy resources. Geothermal resources are at 8%, wind power is at 10%, large hydroelectric sources are at 8%, solar energy is at 13%, and coal is at 0%. Biomass and waste sources have decreased to 0% from 1% in 2016. Natural gas is at 20% having decreased from 19% in 2016 (11).

**TABLE 2-2: SCE 2017 POWER CONTENT MIX**

Energy Resources	2017 SCE Power Mix
<b>Eligible Renewable</b>	<b>32%</b>
Biomass & waste	0%
Geothermal	8%
Small Hydroelectric	1%
Solar	13%
Wind	10%
<b>Coal</b>	<b>0%</b>
<b>Large Hydroelectric</b>	<b>8%</b>
<b>Natural Gas</b>	<b>20%</b>
<b>Nuclear</b>	<b>6%</b>
<b>Other</b>	<b>0%</b>
Unspecified Sources of power*	34%
<b>Total</b>	<b>100%</b>

\* "Unspecified sources of power" means electricity from transactions that are not traceable to specific generation sources

## 2.3 NATURAL GAS

The usage associated with natural gas use were calculated using the CalEEMod model. The following summary of natural gas resources and service providers, delivery systems, and associated regulation is excerpted from information provided by the California Public Utilities Commission (CPUC).

*"The California Public Utilities Commission (PUC) regulates natural gas utility service for approximately 10.8 million customers that receive natural gas from Pacific Gas and Electric (PG&E), Southern California Gas (SoCalGas), San Diego Gas & Electric (SDG&E), Southwest Gas, and several smaller natural gas utilities. The CPUC also regulates independent storage operators: Lodi Gas Storage, Wild Goose Storage, Central Valley Storage and Gill Ranch Storage.*

*The vast majority of California's natural gas customers are residential and small commercial customers, referred to as "core" customers, who accounted for approximately 32% of the natural gas delivered by California utilities in 2012. Large consumers, like*

*electric generators and industrial customers, referred to as “noncore” customers, accounted for approximately 68% of the natural gas delivered by California utilities in 2012.*

*The PUC regulates the California utilities’ natural gas rates and natural gas services, including in-state transportation over the utilities’ transmission and distribution pipeline systems, storage, procurement, metering and billing. Most of the natural gas used in California comes from out-of-state natural gas basins. In 2012, California customers received 35% of their natural gas supply from basins located in the Southwest, 16% from Canada, 40% from the Rocky Mountains, and 9% from basins located within California. California gas utilities may soon also begin receiving biogas into their pipeline systems.*

*Natural gas from out-of-state production basins is delivered into California via the interstate natural gas pipeline system. The major interstate pipelines that deliver out-of-state natural gas to California consumers are the Gas Transmission Northwest Pipeline, Kern River Pipeline, Transwestern Pipeline, El Paso Pipeline, Ruby Pipeline, Questar Southern Trails and Mojave Pipeline. Another pipeline, the North Baja – Baja Norte Pipeline, takes gas off the El Paso Pipeline at the California/Arizona border, and delivers that gas through California into Mexico. While the Federal Energy Regulatory Commission (FERC) regulates the transportation of natural gas on the interstate pipelines, the PUC often participates in FERC regulatory proceedings to represent the interests of California natural gas consumers.*

*Most of the natural gas transported via the interstate pipelines, as well as some of the California-produced natural gas, is delivered into the PG&E and SoCalGas intrastate natural gas transmission pipeline systems (commonly referred to as California’s “backbone” natural gas pipeline system). Natural gas on the utilities’ backbone pipeline systems is then delivered into the local transmission and distribution pipeline systems, or to natural gas storage fields. Some large noncore customers take natural gas directly off the high-pressure backbone pipeline systems, while core customers and other noncore customers take natural gas off the utilities’ distribution pipeline systems. The PUC has regulatory jurisdiction over 150,000 miles of utility-owned natural gas pipelines, which transported 82% of the total amount of natural gas delivered to California’s gas consumers in 2012.*

*SDG&E and Southwest Gas’ southern division are wholesale customers of SoCalGas, and currently receive all of their natural gas from the SoCalGas system (Southwest Gas also provides natural gas distribution service in the Lake Tahoe area). Some other municipal wholesale customers are the cities of Palo Alto, Long Beach, and Vernon, which are not regulated by the CPUC.*

*Some of the natural gas delivered to California customers may be delivered directly to them without being transported over the regulated utility systems. For example, the Kern River/Mojave pipeline system can deliver natural gas directly to some large customers, “bypassing” the utilities’ systems. Much of California-produced natural gas is also delivered directly to large consumers.*



*PG&E and SoCalGas own and operate several natural gas storage fields that are located in northern and southern California. These storage fields, and four independently owned storage utilities – Lodi Gas Storage, Wild Goose Storage, Central Valley Storage, and Gill Ranch Storage – help meet peak seasonal natural gas demand and allow California natural gas customers to secure natural gas supplies more efficiently. (A portion of the Gill Ranch facility is owned by PG&E).*

*California's regulated utilities do not own any natural gas production facilities. All of the natural gas sold by these utilities must be purchased from suppliers and/or marketers. The price of natural gas sold by suppliers and marketers was deregulated by the FERC in the mid-1980's and is determined by "market forces." However, the PUC decides whether California's utilities have taken reasonable steps in order to minimize the cost of natural gas purchased on behalf of their core customers." (12)*

As indicated in the preceding discussions, natural gas is available from a variety of in-state and out-of-state sources and is provided throughout the state in response to market supply and demand. Complementing available natural gas resources, biogas may soon be available via existing delivery systems, thereby increasing the availability and reliability of resources in total. The PUC oversees utility purchases and transmission of natural gas to ensure reliable and affordable natural gas deliveries to existing and new consumers throughout the State.

## **2.4 TRANSPORTATION ENERGY RESOURCES**

The Project would generate additional vehicle trips with resulting consumption of energy resources, predominantly gasoline and diesel fuel. In March 2018, the Department of Motor Vehicles (DMV) identified 35 million registered vehicles in California (13), and those vehicles (as noted previously) consume an estimated 19 billion gallons of fuel each year<sup>1</sup>. Gasoline (and other vehicle fuels) are commercially-provided commodities and would be available to the Project patrons and employees via commercial outlets.

California's on-road transportation system includes 170,000 miles of highways and major roadways, more than 27 million passenger vehicles and light trucks, and almost 8 million medium- and heavy-duty vehicles (13). While gasoline consumption has been declining since 2008 it is still by far the dominant fuel. Petroleum comprises about 92 percent of all transportation energy use, excluding fuel consumed for aviation and most marine vessels (14). Nearly 19 billion gallons of on-highway fuel are burned each year, including 15.1 billion gallons of gasoline (including ethanol) and 3.9 billion gallons of diesel fuel (including biodiesel and renewable diesel). In 2016, Californians also used 194 million therms of natural gas as a transportation fuel (15), or the equivalent of 155 million gallons of gasoline.

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<sup>1</sup> Fuel consumptions estimated utilizing information from EMFAC2017.

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### 3 REGULATORY BACKGROUND

Federal and state agencies regulate energy use and consumption through various means and programs. On the federal level, the United States Department of Transportation, the United States Department of Energy, and the United States Environmental Protection Agency are three federal agencies with substantial influence over energy policies and programs. On the state level, the PUC and the California Energy Commissions (CEC) are two agencies with authority over different aspects of energy. Relevant federal and state energy-related laws and plans are summarized below.

#### 3.1 FEDERAL REGULATIONS

##### Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA)

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) promoted the development of inter-modal transportation systems to maximize mobility as well as address national and local interests in air quality and energy. ISTEA contained factors that Metropolitan Planning Organizations (MPOs) were to address in developing transportation plans and programs, including some energy-related factors. To meet the new ISTEA requirements, MPOs adopted explicit policies defining the social, economic, energy, and environmental values guiding transportation decisions. *Transportation and access to the Project site is provided primarily by the local and regional roadway systems. The Project would not interfere with, nor otherwise obstruct intermodal transportation plans or projects that may be realized pursuant to the ISTEA because SCAG is not planning for intermodal facilities on or through the Project site.*

##### The Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21)

The Transportation Equity Act for the 21st Century (TEA-21) was signed into law in 1998 and builds upon the initiatives established in the ISTEA legislation, discussed above. TEA-21 authorizes highway, highway safety, transit, and other efficient surface transportation programs. TEA-21 continues the program structure established for highways and transit under ISTEA, such as flexibility in the use of funds, emphasis on measures to improve the environment, and focus on a strong planning process as the foundation of good transportation decisions. TEA-21 also provides for investment in research and its application to maximize the performance of the transportation system through, for example, deployment of Intelligent Transportation Systems, to help improve operations and management of transportation systems and vehicle safety. *The Project site is located along major transportation corridors with proximate access to the Interstate freeway system and supports the strong planning processes emphasized under TEA-21. The Project is therefore consistent with, and would not otherwise interfere with, nor obstruct implementation of TEA-21.*

## 3.2 CALIFORNIA REGULATIONS

### Integrated Energy Policy Report

Senate Bill 1389 (Bowen, Chapter 568, Statutes of 2002) requires the California Energy Commission to prepare a biennial integrated energy policy report that assesses major energy trends and issues facing the state's electricity, natural gas, and transportation fuel sectors and provides policy recommendations to conserve resources; protect the environment; ensure reliable, secure, and diverse energy supplies; enhance the state's economy; and protect public health and safety (Public Resources Code § 25301a)). The Energy Commission prepares these assessments and associated policy recommendations every two years, with updates in alternate years, as part of the Integrated Energy Policy Report.

The 2018 Integrated Energy Policy Report (2018 IEPR) was adopted February 20, 2019, and continues to work towards improving electricity, natural gas, and transportation fuel energy use in California. The 2018 IEPR focuses on a variety of topics such as including the environmental performance of the electricity generation system, landscape-scale planning, the response to the gas leak at the Aliso Canyon natural gas storage facility, transportation fuel supply reliability issues, updates on Southern California electricity reliability, methane leakage, climate adaptation activities for the energy sector, climate and sea level rise scenarios, and the California Energy Demand Forecast (16). *Electricity would be provided to the Project by SCE and natural gas is provided by SoCalGas. The 2018 Corporate Sustainability Report for both SCE and SoCalGas builds on existing state programs and policies. As such, the Project is consistent with, and would not otherwise interfere with, nor obstruct implementation the goals presented in the 2018 IEPR.*

### State of California Energy Plan

The CEC is responsible for preparing the State Energy Plan, which identifies emerging trends related to energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy. The Plan calls for the state to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies a number of strategies, including assistance to public agencies and fleet operators and encouragement of urban designs that reduce vehicle miles traveled and accommodate pedestrian and bicycle access. *The Project site is located along major transportation corridors with proximate access to the Interstate freeway system. The Project does not propose a land use development but upgrade the existing wastewater treatment plant with the addition of a primary clarifier, backup generator, trickling filter recirculation pumps, and a sludge dewatering building. Therefore, the Project supports urban design and planning processes identified under the State of California Energy Plan, is consistent with, and would not otherwise interfere with, nor obstruct implementation of the State of California Energy Plan.*

### California Code Title 24, Part 6, Energy Efficiency Standards

California Code of Regulations Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The 2019 version of Title 24 was adopted by the California Energy Commission (CEC) and will become effective on January 1, 2020. The 2019 Title 24 standards go into effect on January 1, 2020 and are applicable to building permit applications submitted on or after that date. The 2019 Title 24 standards require solar photovoltaic systems for new homes, establish requirements for newly constructed healthcare facilities, encourage demand responsive technologies for residential buildings, update indoor and outdoor lighting for nonresidential buildings. The CEC anticipates that single-family homes built with the 2019 standards will use approximately 7 percent less energy compared to the residential homes built under the 2016 standards. Additionally, after implementation of solar photovoltaic systems, homes built under the 2019 standards will about 53 percent less energy than homes built under the 2016 standards. Nonresidential buildings will use approximately 30 percent less energy due to lighting upgrades (17). *As a conservative measure, the analysis herein assumes compliance with the 2016 Title 24 Standards and no additional reduction for compliance with the 2019 standards have been taken.*

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## 4 PROJECT ENERGY DEMANDS AND ENERGY EFFICIENCY MEASURES

### 4.1 EVALUATION CRITERIA

In compliance with Appendix G of the *State CEQA Guidelines* (1), this report analyzes the project's anticipated energy use to determine if the Project would:

- Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation; or
- Conflict with or obstruct a state or local plan for renewable energy or energy efficiency

In addition, Appendix F of the *State CEQA Guidelines* (18), states that the means of achieving the goal of energy conservation includes the following:

- Decreasing overall per capita energy consumption;
- Decreasing reliance on fossil fuels such as coal, natural gas and oil; and
- Increasing reliance on renewable energy sources.

### 4.2 METHODOLOGY

Information from the CalEEMod 2016.3.2 outputs for the *Crestline Sanitation Huston Creek Wastewater Treatment Plant (WWTP) Dewatering Building and Primary Clarifier Project Air Quality Impact Analysis (AQIA)* (Urban Crossroads, Inc., 2019) (19) was utilized in this analysis, detailing Project related construction equipment, transportation energy demands, and facility energy demands. These outputs can be referenced in Appendix 3.1.

### 4.3 CONSTRUCTION ENERGY DEMANDS

#### 4.3.1 CONSTRUCTION EQUIPMENT ELECTRICITY USAGE ESTIMATES

The focus within this section is the energy implications of the construction process, specifically the power cost from on-site electricity consumption during construction of the proposed Project. Based on the 2017 National Construction Estimator, Richard Pray (2017) (20), the typical power cost per 1,000 square feet of construction per month is estimated to be \$2.32. For the Crestline Sanitation Huston Creek Wastewater Treatment Plant (WWTP) Dewatering Building and Primary Clarifier Project development, the Project plans to develop approximately 4,383 square feet of area the course of 24 months. Based on Table 4-1, the total power cost of the on-site electricity usage during the construction of the proposed Project is estimated to be approximately \$244.05. Additionally, as of July 26, 2019, SCE's general service rate schedule (GS-1) for general uses are \$0.08 per kWh of electricity (21). As shown on Table 4-2, the total electricity usage from on-site Project construction related activities is estimated to be approximately 3,051 kWh.

**TABLE 4-1: PROJECT CONSTRUCTION POWER COST**

Power Cost (per 1,000 SF of construction area per month)	Total Construction Area Size (1,000 SF)	Construction Duration (months)	Project Construction Power Cost
\$2.32	4.383	24	\$244.05
<b>TOTAL PROJECT CONSTRUCTION POWER COST</b>			<b>\$244.05</b>

**TABLE 4-2: PROJECT CONSTRUCTION ELECTRICITY USAGE**

Cost per kWh	Project Construction Electricity Usage (kWh)
\$0.08	3,051
<b>TOTAL PROJECT CONSTRUCTION ELECTRICITY</b>	<b>3,051</b>

<sup>1</sup>Assumes the Project will be under the GS-1 General Industrial service rate under SCE

#### 4.3.2 CONSTRUCTION EQUIPMENT FUEL ESTIMATES

Fuel consumed by construction equipment would be the primary energy resource expended over the course of Project construction. Project construction activity timeline estimates, construction equipment schedules, equipment power ratings, load factors, and associated fuel consumption estimates are presented in Table 4-3.

Eight-hour daily use of all equipment is assumed. The aggregate fuel consumption rate for all equipment is estimated at 18.5 horsepower-hour per gallon (hp-hr-gal.), obtained from California Air Resources Board (CARB) 2018 Emissions Factors Tables and cited fuel consumption rate factors presented in Table D-24 of the Moyer guidelines (22). For the purposes of this analysis, the calculations are based on all construction equipment being diesel-powered which is standard practice consistent with industry standards. Diesel fuel would be supplied by existing commercial fuel providers serving the Cities and region.

As presented in Table 4-3, Project construction activities would consume an estimated 194,108 gallons of diesel fuel. Project construction would represent a “single-event” diesel fuel demand and would not require on-going or permanent commitment of diesel fuel resources for this purpose.



**TABLE 4-3: CONSTRUCTION EQUIPMENT FUEL CONSUMPTION ESTIMATES**

Equipment	HP Rating	Quantity	Usage Hours	Load Factor	HP-hrs/day	Total Fuel Consumption (gal. diesel fuel)
Cement and Mortar Mixers	9	3	8	0.56	121	3,531
Cranes	231	1	8	0.29	536	15,643
Dumpers/Tenders	16	10	8	0.38	486	14,198
Excavators	158	2	8	0.38	961	28,040
Generator Sets	84	1	8	0.74	497	14,515
Off-Highway Trucks	402	1	8	0.38	1,222	35,672
Other Construction Equipment	172	1	8	0.42	578	16,869
Pavers	130	1	8	0.42	437	12,750
Pumps	84	2	8	0.74	995	29,030
Rollers	80	1	8	0.38	243	7,099
Tractors/Loaders/Backhoes	97	2	8	0.37	574	16,762
Cement and Mortar Mixers	9	3	8	0.56	121	3,531
Cranes	231	1	8	0.29	536	15,643
<b>CONSTRUCTION FUEL DEMAND (GALLONS DIESEL FUEL)</b>						<b>194,108</b>

### 4.3.3 CONSTRUCTION WORKER FUEL ESTIMATES

It is assumed that all construction worker trips are from light duty autos (LDA) along area roadways. With respect to estimated VMT, the construction worker trips would generate an estimated 500,094 VMT (19). Data regarding Project related construction worker trips were based on CalEEMod 2016.3.2 model defaults utilized within the AQIA. Detailed model outputs are provided in Appendix 3.1.

Vehicle fuel efficiencies for LDA were estimated using information generated within the 2014 version of the Emissions FACTor model (EMFAC) developed by the CARB. EMFAC 2014 is a mathematical model that was developed to calculate emission rates, fuel consumption, and VMT from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by the ARB to project changes in future emissions from on-road mobile sources (23). EMFAC 2014 was run for the LDA vehicle class within the California sub-area for a 2022 calendar year. Data from EMFAC 2014 is shown in Appendix 3.2.

As generated by EMFAC 2014, an aggregated fuel economy of LDAs ranging from model year 1974 to model year 2022 are estimated to have a fuel efficiency of 32.15 miles per gallon (mpg). Table 4-4 provides an estimated annual fuel consumption resulting from the Project generated by LDAs related to construction worker trips. Based on Table 4-4, it is estimated that 15,554 gallons of fuel will be consumed related to construction worker trips during full construction of the proposed Project. Project construction worker trips would represent a “single-event” gasoline fuel demand and would not require on-going or permanent commitment of fuel resources for this purpose.

**TABLE 4-4: CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES**

Worker Trips / Day	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
63	14.7	500,094	32.15	15,554
<b>TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION</b>				<b>15,554</b>

### 4.3.4 CONSTRUCTION HAULING FUEL ESTIMATES

With respect to estimated VMT, the construction hauling trips would generate an estimated 8,200 VMT along area roadways (19). It is assumed that 100% of all hauling trips are from heavy-heavy duty trucks (HHD). These assumptions are consistent with the 2016.3.2 CalEEMod defaults utilized within the within the AQIA (19). Vehicle fuel efficiencies for HHD trucks were estimated using information generated within EMFAC 2014. For purposes of this analysis, EMFAC 2014 was run for the HHD vehicle class within the California sub-area for a 2022 calendar year. Data from EMFAC 2014 is shown in Appendix 3.2.

As generated by EMFAC 2014, an aggregated fuel economy of HHD trucks ranging from model year 1974 to model year 2022 are estimated to have a fuel efficiency of 6.76 mpg. Based on Table

4-5, it is estimated that 1,213 gallons of fuel will be consumed related to construction hauling trips during full construction of the proposed Project.

**TABLE 4-5: CONSTRUCTION HAULING FUEL CONSUMPTION ESTIMATES**

Vendor Trips / Day	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
410	20	8,200	6.76	1,213
<b>PROJECT HAULING HEAVY DUTY TRUCK TOTAL</b>				<b>1,213</b>

#### **4.3.5 CONSTRUCTION ENERGY EFFICIENCY/CONSERVATION MEASURES**

The equipment used for Project construction would conform to CARB regulations and CA emissions standards. There are no unusual Project characteristics or construction processes that would require the use of equipment that would be more energy intensive than is used for comparable activities; or equipment that would not conform to current emissions standards (and related fuel efficiencies). Equipment employed in construction of the Project would therefore not result in inefficient wasteful, or unnecessary consumption of fuel.

The Project would utilize construction contractors which practice compliance with applicable CARB regulation regarding retrofitting, repowering, or replacement of diesel off-road construction equipment. Additionally, CARB has adopted the Airborne Toxic Control Measure to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter and other Toxic Air Contaminants. Compliance with anti-idling and emissions regulations would result in a more efficient use of construction-related energy and the minimization or elimination of wasteful or unnecessary consumption of energy. Idling restrictions and the use of newer engines and equipment would result in less fuel combustion and energy consumption.

Additionally, certain incidental construction-source energy efficiencies would likely accrue through implementation of California regulations and best available control measures (BACM). More specifically, California Code of Regulations Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby precluding unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. To this end, “grading plans shall reference the requirement that a sign shall be posted on-site stating that construction workers need to shut off engines at or before five minutes of idling.” In this manner, construction equipment operators are informed that engines are to be turned off at or prior to five minutes of idling. Enforcement of idling limitations is realized through periodic site inspections conducted by County building officials, and/or in response to citizen complaints.

Indirectly, construction energy efficiencies and energy conservation would be achieved for the proposed development through energy efficiencies realized from bulk purchase, transport and use of construction materials.

A full analysis related to the energy needed to form construction materials is not included in this analysis due to a lack of detailed Project-specific information on construction materials. At this time, an analysis of the energy needed to create Project-related construction materials would be extremely speculative and thus has not been prepared.

In general, the construction processes promote conservation and efficient use of energy by reducing raw materials demands, with related reduction in energy demands associated with raw materials extraction, transportation, processing and refinement. Use of materials in bulk reduces energy demands associated with preparation and transport of construction materials as well as the transport and disposal of construction waste and solid waste in general, with corollary reduced demands on area landfill capacities and energy consumed by waste transport and landfill operations.

## **4.4 SUMMARY**

### **4.4.1 CONSTRUCTION ENERGY DEMANDS**

The estimated power cost of on-site electricity usage during the construction of the proposed Project is assumed to be around \$244.05. Additionally, based on the assumed power cost, it is estimated that the total electricity usage during construction is calculated to be around 3,051 kWh.

Construction equipment used by the Project would result in single event consumption of approximately 194,108 gallons of diesel fuel. Construction equipment use of fuel would not be atypical for the type of construction proposed because there are no aspects of the Project's proposed construction process that are unusual or energy-intensive, and Project construction equipment would conform to the applicable CARB emissions standards, acting to promote equipment fuel efficiencies.

CCR Title 13, Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than 5 minutes, thereby precluding unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. Best available control measures inform construction equipment operators of this requirement. Enforcement of idling limitations is realized through periodic site inspections conducted by County building officials, and/or in response to citizen complaints.

Construction worker trips for construction of the proposed Project would result in the estimated fuel consumption of 15,554 gallons of fuel. Additionally, fuel consumption from construction hauling trips will total approximately 1,213 gallons. Diesel fuel would be supplied by County and regional commercial vendors. Indirectly, construction energy efficiencies and energy conservation would be achieved through the use of bulk purchases, transport and use of construction materials. The 2018 IEPR released by the California Energy Commission has shown that fuel efficiencies are getting better within on and off-road vehicle engines due to more stringent government requirements (16). As supported by the preceding discussions, Project construction energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary.



## 5 CONCLUSION

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***Impact Energy-1: Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.***

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As supported by the preceding analyses, Project construction would not result in the inefficient, wasteful or unnecessary consumption of energy. Further, the energy demands of the Project can be accommodated within the context of available resources and energy delivery systems. The Project would therefore not cause or result in the need for additional energy producing or transmission facilities. The Project would not engage in wasteful or inefficient uses of energy and aims to achieve energy conservations goals within the State of California.

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***Impact Energy-2: Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.***

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The Project includes construction activity and associated improvements and would not result in the inefficient, wasteful, or unnecessary consumption of energy. In fact, improving the pumps, wells, and maintenance facilities would result in a more efficient process and consequently reduce a wasteful use of energy. Further, the Project would not cause or result in the need for additional energy producing facilities or energy delivery systems.

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## **7 CERTIFICATIONS**

The contents of this energy report represent an accurate depiction of the environmental impacts associated with the proposed Crestline Sanitation Huston Creek Wastewater Treatment Plant (WWTP) Dewatering Building and Primary Clarifier Project. The information contained in this energy report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 336-5987.

Haseeb Qureshi  
Associate Principal  
URBAN CROSSROADS, INC.  
260 E. Baker, Suite 200  
Costa Mesa, CA 92626  
(949) 336-5987  
[hqureshi@urbanxroads.com](mailto:hqureshi@urbanxroads.com)

### **EDUCATION**

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

Bachelor of Arts in Environmental Analysis and Design  
University of California, Irvine • June, 2006

### **PROFESSIONAL AFFILIATIONS**

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

### **PROFESSIONAL CERTIFICATIONS**

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

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## **APPENDIX 3.1:**

### **CALEEMOD ANNUAL CONSTRUCTION EMISSIONS MODEL OUTPUTS**

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## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**Crestline Sanitation (Construction - Unmitigated)**  
**San Bernardino-South Coast County, Annual**

## 1.0 Project Characteristics

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### 1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	4.38	1000sqft	0.10	4,383.00	0

### 1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	10			Operational Year	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

### 1.3 User Entered Comments & Non-Default Data

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

Project Characteristics -

Land Use -

Construction Phase - Per the Project Description, Construction is expected to begin in 2020 and last approximately 24 months.

Off-road Equipment - Construction Equipment adjusted as per information provided in the Project Description.

Grading - Total acres graded based on the assumption that the use of Tractors/Loader/Backhoe equipment (2) would disturb up to 1 acre per day.

Vehicle Trips - Construction Run Only.

Energy Use - Construction Run Only.

Water And Wastewater - Construction Run Only.

Solid Waste - Construction Run Only.

Construction Off-road Equipment Mitigation - Rule 403

Trips and VMT - As per information provided by the Project applicant, it is estimated that 205 truckloads (one-way) or 410 truckloads (two-way) will be required to removal excavated material.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	2.00	540.00
tblConstructionPhase	PhaseEndDate	3/3/2020	3/25/2022
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24NG	15.36	0.00
tblGrading	AcresOfGrading	0.00	1.00
tblGrading	MaterialExported	0.00	2,050.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblSolidWaste	LandfillCaptureGasFlare	94.00	0.00
tblSolidWaste	LandfillNoGasCapture	6.00	0.00



## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

tblSolidWaste	SolidWasteGenerationRate	5.43	0.00
tblTripsAndVMT	HaulingTripNumber	256.00	410.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TTP	28.00	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TTP	13.00	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TTP	59.00	0.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	0.00
tblVehicleTrips	ST_TR	1.32	0.00
tblVehicleTrips	SU_TR	0.68	0.00
tblVehicleTrips	WD_TR	6.97	0.00
tblWater	IndoorWaterUseRate	1,012,875.00	0.00

## 2.0 Emissions Summary

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## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**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	0.5982	5.2130	4.7163	9.3700e-003	0.0793	0.2556	0.3349	0.0209	0.2424	0.2634	0.0000	803.8904	803.8904	0.1738	0.0000	808.2346
2021	0.6565	5.5913	5.5285	0.0111	0.0939	0.2662	0.3601	0.0248	0.2527	0.2775	0.0000	955.5097	955.5097	0.2057	0.0000	960.6518
2022	0.1382	1.1316	1.2498	2.5500e-003	0.0241	0.0525	0.0766	6.2600e-003	0.0499	0.0562	0.0000	219.0432	219.0432	0.0471	0.0000	220.2197
Maximum	0.6565	5.5913	5.5285	0.0111	0.0939	0.2662	0.3601	0.0248	0.2527	0.2775	0.0000	955.5097	955.5097	0.2057	0.0000	960.6518

**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	0.5982	5.2130	4.7163	9.3700e-003	0.0789	0.2556	0.3345	0.0209	0.2424	0.2633	0.0000	803.8895	803.8895	0.1738	0.0000	808.2338
2021	0.6565	5.5913	5.5285	0.0111	0.0935	0.2662	0.3597	0.0248	0.2527	0.2775	0.0000	955.5086	955.5086	0.2057	0.0000	960.6508
2022	0.1382	1.1316	1.2498	2.5500e-003	0.0237	0.0525	0.0762	6.2200e-003	0.0499	0.0561	0.0000	219.0429	219.0429	0.0471	0.0000	220.2194
Maximum	0.6565	5.5913	5.5285	0.0111	0.0935	0.2662	0.3597	0.0248	0.2527	0.2775	0.0000	955.5086	955.5086	0.2057	0.0000	960.6508

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

	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
Percent Reduction	0.00	0.00	0.00	0.00	0.60	0.00	0.15	0.23	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	3-2-2020	6-1-2020	1.7440	1.7440
2	6-2-2020	9-1-2020	1.7439	1.7439
3	9-2-2020	12-1-2020	1.7252	1.7252
4	12-2-2020	3-1-2021	1.5951	1.5951
5	3-2-2021	6-1-2021	1.5733	1.5733
6	6-2-2021	9-1-2021	1.5732	1.5732
7	9-2-2021	12-1-2021	1.5564	1.5564
8	12-2-2021	3-1-2022	1.4204	1.4204
9	3-2-2022	6-1-2022	0.3629	0.3629
		Highest	1.7440	1.7440

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**2.2 Overall Operational****Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0179	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1000e-004	1.1000e-004	0.0000	0.0000	1.2000e-004
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	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
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0179</b>	<b>0.0000</b>	<b>6.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.1000e-004</b>	<b>1.1000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.2000e-004</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**2.2 Overall Operational****Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0179	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1000e-004	1.1000e-004	0.0000	0.0000	1.2000e-004
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	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
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0179</b>	<b>0.0000</b>	<b>6.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.1000e-004</b>	<b>1.1000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.2000e-004</b>

	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
<b>Percent Reduction</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

**3.0 Construction Detail****Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	3/2/2020	3/25/2022	5	540	

**Acres of Grading (Site Preparation Phase): 0**

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**Acres of Grading (Grading Phase): 1****Acres of Paving: 0****Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)****OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Cement and Mortar Mixers	3	8.00	9	0.56
Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Grading	Cranes	1	8.00	231	0.29
Grading	Dumpers/Tenders	10	8.00	16	0.38
Grading	Excavators	2	8.00	158	0.38
Grading	Generator Sets	1	8.00	84	0.74
Grading	Off-Highway Trucks	1	8.00	402	0.38
Grading	Other Construction Equipment	1	8.00	172	0.42
Grading	Pavers	1	8.00	130	0.42
Grading	Pumps	2	8.00	84	0.74
Grading	Rollers	1	8.00	80	0.38
Grading	Rubber Tired Dozers	0	1.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37

**Trips and VMT**

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	25	63.00	0.00	410.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

Water Exposed Area

**3.2 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					6.5000e-004	0.0000	6.5000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.5636	5.1653	4.4455	8.5800e-003		0.2550	0.2550		0.2419	0.2419	0.0000	732.8452	732.8452	0.1715	0.0000	737.1320
<b>Total</b>	<b>0.5636</b>	<b>5.1653</b>	<b>4.4455</b>	<b>8.5800e-003</b>	<b>6.5000e-004</b>	<b>0.2550</b>	<b>0.2557</b>	<b>7.0000e-005</b>	<b>0.2419</b>	<b>0.2420</b>	<b>0.0000</b>	<b>732.8452</b>	<b>732.8452</b>	<b>0.1715</b>	<b>0.0000</b>	<b>737.1320</b>

**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	5.3000e-004	0.0210	3.2100e-003	6.0000e-005	3.0100e-003	6.0000e-005	3.0700e-003	7.8000e-004	6.0000e-005	8.4000e-004	0.0000	6.2117	6.2117	3.5000e-004	0.0000	6.2205
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0341	0.0268	0.2676	7.2000e-004	0.0756	5.1000e-004	0.0761	0.0201	4.7000e-004	0.0206	0.0000	64.8335	64.8335	1.9500e-003	0.0000	64.8822
<b>Total</b>	<b>0.0346</b>	<b>0.0478</b>	<b>0.2708</b>	<b>7.8000e-004</b>	<b>0.0787</b>	<b>5.7000e-004</b>	<b>0.0792</b>	<b>0.0209</b>	<b>5.3000e-004</b>	<b>0.0214</b>	<b>0.0000</b>	<b>71.0452</b>	<b>71.0452</b>	<b>2.3000e-003</b>	<b>0.0000</b>	<b>71.1027</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**3.2 Grading - 2020****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					2.5000e-004	0.0000	2.5000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.5635	5.1652	4.4455	8.5800e-003		0.2550	0.2550		0.2419	0.2419	0.0000	732.8443	732.8443	0.1715	0.0000	737.1311
<b>Total</b>	<b>0.5635</b>	<b>5.1652</b>	<b>4.4455</b>	<b>8.5800e-003</b>	<b>2.5000e-004</b>	<b>0.2550</b>	<b>0.2553</b>	<b>3.0000e-005</b>	<b>0.2419</b>	<b>0.2419</b>	<b>0.0000</b>	<b>732.8443</b>	<b>732.8443</b>	<b>0.1715</b>	<b>0.0000</b>	<b>737.1311</b>

**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	5.3000e-004	0.0210	3.2100e-003	6.0000e-005	3.0100e-003	6.0000e-005	3.0700e-003	7.8000e-004	6.0000e-005	8.4000e-004	0.0000	6.2117	6.2117	3.5000e-004	0.0000	6.2205
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0341	0.0268	0.2676	7.2000e-004	0.0756	5.1000e-004	0.0761	0.0201	4.7000e-004	0.0206	0.0000	64.8335	64.8335	1.9500e-003	0.0000	64.8822
<b>Total</b>	<b>0.0346</b>	<b>0.0478</b>	<b>0.2708</b>	<b>7.8000e-004</b>	<b>0.0787</b>	<b>5.7000e-004</b>	<b>0.0792</b>	<b>0.0209</b>	<b>5.3000e-004</b>	<b>0.0214</b>	<b>0.0000</b>	<b>71.0452</b>	<b>71.0452</b>	<b>2.3000e-003</b>	<b>0.0000</b>	<b>71.1027</b>



## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**3.2 Grading - 2021****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					6.5000e-004	0.0000	6.5000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.6181	5.5395	5.2319	0.0102		0.2656	0.2656		0.2521	0.2521	0.0000	873.3665	873.3665	0.2032	0.0000	878.4460
<b>Total</b>	<b>0.6181</b>	<b>5.5395</b>	<b>5.2319</b>	<b>0.0102</b>	<b>6.5000e-004</b>	<b>0.2656</b>	<b>0.2662</b>	<b>7.0000e-005</b>	<b>0.2521</b>	<b>0.2522</b>	<b>0.0000</b>	<b>873.3665</b>	<b>873.3665</b>	<b>0.2032</b>	<b>0.0000</b>	<b>878.4460</b>

**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	6.0000e-004	0.0231	3.7200e-003	8.0000e-005	3.0700e-003	6.0000e-005	3.1400e-003	8.0000e-004	6.0000e-005	8.7000e-004	0.0000	7.3357	7.3357	4.1000e-004	0.0000	7.3461
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0378	0.0286	0.2929	8.3000e-004	0.0902	5.9000e-004	0.0907	0.0239	5.4000e-004	0.0245	0.0000	74.8075	74.8075	2.0900e-003	0.0000	74.8598
<b>Total</b>	<b>0.0384</b>	<b>0.0518</b>	<b>0.2967</b>	<b>9.1000e-004</b>	<b>0.0932</b>	<b>6.5000e-004</b>	<b>0.0939</b>	<b>0.0247</b>	<b>6.0000e-004</b>	<b>0.0254</b>	<b>0.0000</b>	<b>82.1432</b>	<b>82.1432</b>	<b>2.5000e-003</b>	<b>0.0000</b>	<b>82.2059</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**3.2 Grading - 2021****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					2.5000e-004	0.0000	2.5000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.6181	5.5395	5.2319	0.0102		0.2656	0.2656		0.2521	0.2521	0.0000	873.3654	873.3654	0.2032	0.0000	878.4449
<b>Total</b>	<b>0.6181</b>	<b>5.5395</b>	<b>5.2319</b>	<b>0.0102</b>	<b>2.5000e-004</b>	<b>0.2656</b>	<b>0.2658</b>	<b>3.0000e-005</b>	<b>0.2521</b>	<b>0.2521</b>	<b>0.0000</b>	<b>873.3654</b>	<b>873.3654</b>	<b>0.2032</b>	<b>0.0000</b>	<b>878.4449</b>

**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	6.0000e-004	0.0231	3.7200e-003	8.0000e-005	3.0700e-003	6.0000e-005	3.1400e-003	8.0000e-004	6.0000e-005	8.7000e-004	0.0000	7.3357	7.3357	4.1000e-004	0.0000	7.3461
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0378	0.0286	0.2929	8.3000e-004	0.0902	5.9000e-004	0.0907	0.0239	5.4000e-004	0.0245	0.0000	74.8075	74.8075	2.0900e-003	0.0000	74.8598
<b>Total</b>	<b>0.0384</b>	<b>0.0518</b>	<b>0.2967</b>	<b>9.1000e-004</b>	<b>0.0932</b>	<b>6.5000e-004</b>	<b>0.0939</b>	<b>0.0247</b>	<b>6.0000e-004</b>	<b>0.0254</b>	<b>0.0000</b>	<b>82.1432</b>	<b>82.1432</b>	<b>2.5000e-003</b>	<b>0.0000</b>	<b>82.2059</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**3.2 Grading - 2022****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.5000e-004	0.0000	6.5000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1299	1.1208	1.1873	2.3500e-003		0.0524	0.0524		0.0498	0.0498	0.0000	200.7983	200.7983	0.0465	0.0000	201.9617
<b>Total</b>	<b>0.1299</b>	<b>1.1208</b>	<b>1.1873</b>	<b>2.3500e-003</b>	<b>6.5000e-004</b>	<b>0.0524</b>	<b>0.0530</b>	<b>7.0000e-005</b>	<b>0.0498</b>	<b>0.0499</b>	<b>0.0000</b>	<b>200.7983</b>	<b>200.7983</b>	<b>0.0465</b>	<b>0.0000</b>	<b>201.9617</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3000e-004	4.8700e-003	8.3000e-004	2.0000e-005	2.7500e-003	1.0000e-005	2.7600e-003	6.9000e-004	1.0000e-005	7.0000e-004	0.0000	1.6674	1.6674	9.0000e-005	0.0000	1.6698
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.1300e-003	5.9100e-003	0.0618	1.8000e-004	0.0207	1.3000e-004	0.0209	5.5000e-003	1.2000e-004	5.6200e-003	0.0000	16.5775	16.5775	4.3000e-004	0.0000	16.5883
<b>Total</b>	<b>8.2600e-003</b>	<b>0.0108</b>	<b>0.0626</b>	<b>2.0000e-004</b>	<b>0.0235</b>	<b>1.4000e-004</b>	<b>0.0236</b>	<b>6.1900e-003</b>	<b>1.3000e-004</b>	<b>6.3200e-003</b>	<b>0.0000</b>	<b>18.2449</b>	<b>18.2449</b>	<b>5.2000e-004</b>	<b>0.0000</b>	<b>18.2580</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**3.2 Grading - 2022****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					2.5000e-004	0.0000	2.5000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1299	1.1208	1.1873	2.3500e-003		0.0524	0.0524		0.0498	0.0498	0.0000	200.7980	200.7980	0.0465	0.0000	201.9614
<b>Total</b>	<b>0.1299</b>	<b>1.1208</b>	<b>1.1873</b>	<b>2.3500e-003</b>	<b>2.5000e-004</b>	<b>0.0524</b>	<b>0.0526</b>	<b>3.0000e-005</b>	<b>0.0498</b>	<b>0.0498</b>	<b>0.0000</b>	<b>200.7980</b>	<b>200.7980</b>	<b>0.0465</b>	<b>0.0000</b>	<b>201.9614</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3000e-004	4.8700e-003	8.3000e-004	2.0000e-005	2.7500e-003	1.0000e-005	2.7600e-003	6.9000e-004	1.0000e-005	7.0000e-004	0.0000	1.6674	1.6674	9.0000e-005	0.0000	1.6698
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.1300e-003	5.9100e-003	0.0618	1.8000e-004	0.0207	1.3000e-004	0.0209	5.5000e-003	1.2000e-004	5.6200e-003	0.0000	16.5775	16.5775	4.3000e-004	0.0000	16.5883
<b>Total</b>	<b>8.2600e-003</b>	<b>0.0108</b>	<b>0.0626</b>	<b>2.0000e-004</b>	<b>0.0235</b>	<b>1.4000e-004</b>	<b>0.0236</b>	<b>6.1900e-003</b>	<b>1.3000e-004</b>	<b>6.3200e-003</b>	<b>0.0000</b>	<b>18.2449</b>	<b>18.2449</b>	<b>5.2000e-004</b>	<b>0.0000</b>	<b>18.2580</b>

**4.0 Operational Detail - Mobile**

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**4.1 Mitigation Measures Mobile**

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

**4.2 Trip Summary Information**

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

**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
General Light Industry	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

**4.4 Fleet Mix**

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.553113	0.036408	0.180286	0.116335	0.016165	0.005101	0.018218	0.063797	0.001357	0.001565	0.005903	0.000808	0.000944

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## 5.0 Energy Detail

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

[illegible]

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## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

[illegible]

**Mitigated**

[illegible]

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**5.3 Energy by Land Use - Electricity****Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**6.0 Area Detail****6.1 Mitigation Measures Area**



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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0179	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1000e-004	1.1000e-004	0.0000	0.0000	1.2000e-004
Unmitigated	0.0179	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1000e-004	1.1000e-004	0.0000	0.0000	1.2000e-004

## 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	2.0300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0158					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1000e-004	1.1000e-004	0.0000	0.0000	1.2000e-004
<b>Total</b>	<b>0.0179</b>	<b>0.0000</b>	<b>6.0000e-005</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.1000e-004</b>	<b>1.1000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.2000e-004</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**6.2 Area by SubCategory****Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.0300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0158					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1000e-004	1.1000e-004	0.0000	0.0000	1.2000e-004
<b>Total</b>	<b>0.0179</b>	<b>0.0000</b>	<b>6.0000e-005</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.1000e-004</b>	<b>1.1000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.2000e-004</b>

**7.0 Water Detail****7.1 Mitigation Measures Water**

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

## 7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**7.2 Water by Land Use****Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**8.0 Waste Detail**

---

**8.1 Mitigation Measures Waste****Category/Year**

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**8.2 Waste by Land Use****Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**9.0 Operational Offroad**

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

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

## 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 3.2:**

**EMFAC 2014 MODEL OUTPUTS**

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EMFAC2017 (v1.0.2) Emissions Inventory

Region Type: County

Region: SAN BERNARDINO

Calendar Year: 2022

Season: Annual

Vehicle Classification: EMFAC2007 Categories

Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	CalYr	VehClass	MdlYr	Speed	Fuel	Population	Fuel_Consumption
SAN BERNARDINO	2022	HHDT	Aggregated	Aggregated	GAS	8.109229189	0.193395795
SAN BERNARDINO	2022	HHDT	Aggregated	Aggregated	DSL	29107.97285	602.259714
SAN BERNARDINO	2022	HHDT	Aggregated	Aggregated	NG	1162.564465	21.98371287
SAN BERNARDINO	2022	LDA	Aggregated	Aggregated	GAS	910411.4114	1200.769741
SAN BERNARDINO	2022	LDA	Aggregated	Aggregated	DSL	7797.557183	6.697939464
SAN BERNARDINO	2022	LDA	Aggregated	Aggregated	ELEC	14887.76205	0
SAN BERNARDINO	2022	LDT1	Aggregated	Aggregated	GAS	96500.142	129.1698834
SAN BERNARDINO	2022	LDT1	Aggregated	Aggregated	DSL	50.32766755	0.036162766
SAN BERNARDINO	2022	LDT1	Aggregated	Aggregated	ELEC	545.2677578	0
SAN BERNARDINO	2022	LDT2	Aggregated	Aggregated	GAS	296140.2494	444.2948295
SAN BERNARDINO	2022	LDT2	Aggregated	Aggregated	DSL	1648.845265	1.898746908
SAN BERNARDINO	2022	LDT2	Aggregated	Aggregated	ELEC	2600.581024	0
SAN BERNARDINO	2022	LHDT1	Aggregated	Aggregated	GAS	25305.85033	81.10058119
SAN BERNARDINO	2022	LHDT1	Aggregated	Aggregated	DSL	23106.86372	39.50477392
SAN BERNARDINO	2022	LHDT2	Aggregated	Aggregated	GAS	4087.266495	14.99572092
SAN BERNARDINO	2022	LHDT2	Aggregated	Aggregated	DSL	8629.306807	16.19066376
SAN BERNARDINO	2022	MCY	Aggregated	Aggregated	GAS	44575.9037	11.23357379
SAN BERNARDINO	2022	MDV	Aggregated	Aggregated	GAS	241112.779	433.3132726
SAN BERNARDINO	2022	MDV	Aggregated	Aggregated	DSL	4771.984437	7.237646771
SAN BERNARDINO	2022	MDV	Aggregated	Aggregated	ELEC	1385.57814	0
SAN BERNARDINO	2022	MH	Aggregated	Aggregated	GAS	6776.86518	11.17411989
SAN BERNARDINO	2022	MH	Aggregated	Aggregated	DSL	2519.748096	2.013141892
SAN BERNARDINO	2022	MHDT	Aggregated	Aggregated	GAS	2378.587129	29.1984514
SAN BERNARDINO	2022	MHDT	Aggregated	Aggregated	DSL	17930.27232	111.0764873
SAN BERNARDINO	2022	OBUS	Aggregated	Aggregated	GAS	690.7449641	7.222963025
SAN BERNARDINO	2022	OBUS	Aggregated	Aggregated	DSL	303.3506987	2.653672006
SAN BERNARDINO	2022	SBUS	Aggregated	Aggregated	GAS	282.3736929	1.454650909
SAN BERNARDINO	2022	SBUS	Aggregated	Aggregated	DSL	1384.188789	5.715756134
SAN BERNARDINO	2022	UBUS	Aggregated	Aggregated	GAS	158.0031422	2.530300278
SAN BERNARDINO	2022	UBUS	Aggregated	Aggregated	DSL	4.252704076	0.052104315
SAN BERNARDINO	2022	UBUS	Aggregated	Aggregated	ELEC	0.085938117	0
SAN BERNARDINO	2022	UBUS	Aggregated	Aggregated	NG	286.551773	9.615580693

Fuel_Consumption	Total Fuel	VMT	Total VMT	les per Gall	Vehicle Class
193.3957951	624436.8227	826.8194821	4221920.102	6.76	HHDT
602259.714		4173670.291			
21983.71287		47422.99155			
1200769.741	1207467.68	37862689.71	38823487.46	32.15	LDA
6697.939464		343042.3565			
0		617755.3942			
129169.8834	129206.0462	3464551.793	3489143.928	27.00	LDT1
36.16276595		907.4533401			
0		23684.682			
444294.8295	446193.5764	11123436.46	11281305.28	25.28	LDT2
1898.746908		72209.28966			
0		85659.5299			
81100.58119	120605.3551	850203.8881	1673844.176	13.88	LHDT1
39504.77392		823640.2876			
14995.72092	31186.38468	137122.2767	446716.8997	14.32	LHDT2
16190.66376		309594.623			
11233.57379	11233.57379	431598.182	431598.182	38.42	MCY
433313.2726	440550.9193	8728538.882	8979175.025	20.38	MDV
7237.646771		203739.569			
0		46896.57332			
11174.11989	13187.26178	56370.59711	77912.938	5.91	MH
2013.141892		21542.3409			
29198.4514	140274.9387	150089.7292	1364799.147	9.73	MHDT
111076.4873		1214709.418			
7222.963025	9876.635031	36606.36372	59377.46165	6.01	OBUS
2653.672006		22771.09793			
1454.650909	7170.407043	13465.23518	57478.83304	8.02	SBUS
5715.756134		44013.59785			
2530.300278	12197.98529	17853.05159	56649.14979	4.64	UBUS
52.10431536		362.3725942			
0		1.919228349			
9615.580693		38431.80638			

## **Appendix E**

### **Geotechnical Evaluation**

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# Geotechnical Evaluation

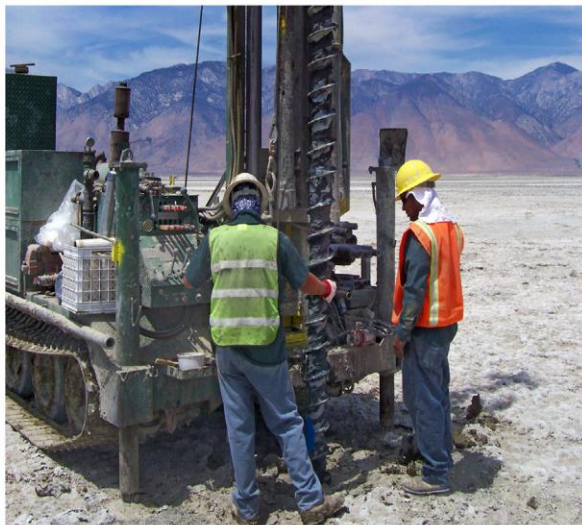
## Huston Creek Wastewater Treatment Plant

### Crestline, California

Dudek

750 Second Street | Encinitas, California 92024

August 20, 2019 | Project No. 210950001



Geotechnical | Environmental | Construction Inspection & Testing | Forensic Engineering & Expert Witness

Geophysics | Engineering Geology | Laboratory Testing | Industrial Hygiene | Occupational Safety | Air Quality | GIS

**Ninyo & Moore**  
Geotechnical & Environmental Sciences Consultants

# Geotechnical Evaluation

## Huston Creek Wastewater Treatment Plant

### Crestline, California

Mr. Phil Giori

Dudek

750 Second Street | Encinitas, California 92024

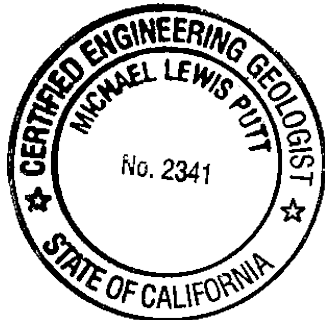
August 20, 2019 | Project No. 210950001



**Brent Adam, PG**  
Senior Staff Geologist



**Michael Putt, PG, CEG**  
Principal Geologist



BAA/DBC/MLP/mlc

Distribution: (1) Addressee (via e-mail)



**Daniel Chu, PhD, PE, GE**  
Chief Geotechnical Engineer



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A – Boring Logs
B – Laboratory Testing
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# 1 INTRODUCTION

In accordance with your request, we have performed a geotechnical evaluation for the Crestline Sanitation District's (CSD) dewatering building and primary clarifier project at Huston Creek Wastewater Treatment Plant in Crestline, California (Figure 1). The purpose of our geotechnical services was to evaluate the soil and geologic conditions at the project site and to provide conclusions and recommendations regarding the geotechnical aspects of the planned new construction.

## 2 SCOPE OF SERVICES

Our scope of services included the following:

- Project coordination and review of readily available geologic maps, published literature, and aerial photographs.
- Site reconnaissance to evaluate the surficial geologic conditions at the site and to locate the proposed boring for coordination with Underground Services Alert for underground utility location.
- Performance of two multi-channel analysis of surface waves seismic surveys to evaluate the shear wave velocity profile and the excavatability of on-site soil and granitic bedrock.
- Subsurface exploration consisting of the excavation, sampling, and logging of four small-diameter borings to depths of up to approximately 36½ feet. The borings were logged by a representative of our firm and relatively undisturbed and bulk samples were obtained at selected intervals from the borings for testing.
- Laboratory testing of representative soil samples. Laboratory tests included evaluation of in-situ moisture and density, percentage of particles finer than No. 200 sieve, sieve analysis, direct shear strength, soil corrosivity, and Proctor density.
- Data compilation and engineering analysis of the information obtained from our background review, subsurface evaluation, and laboratory testing.
- Preparation of this geotechnical report presenting our findings, conclusions, and geotechnical recommendations for the project.

## 3 SITE DESCRIPTION AND PROPOSED CONSTRUCTION

The subject site is located along the top of a northeasterly-trending ridgeline. The ridgeline and site descend to the northeast with elevations at the site ranging from approximately 4490 feet above mean sea level (MSL) near the southwest portion of the site by the existing digester to approximately 4425 feet above MSL near the existing chlorine building in the northeast portion of the site (CSD, 1984). An approximately 14-foot-high slope descends to the northeast from the existing sludge dewatering building. A cut slope up to approximately 30 feet high that exposes weathered granitic rock descends from the existing digester in the southwest portion of the site. The existing asphalt concrete pavements at the site are deteriorated and have extensive cracking in some areas.

Natural slopes descend up to approximately 200 feet from the site to Huston Creek to the north and a tributary drainage to the southeast. The natural slopes are generally inclined at a slope ratio of 2:1 or flatter and have a moderately dense growth of pine trees, oak trees, and other native vegetation. Scattered boulders were observed on the ground surface on the natural slopes.

We understand that the proposed project will include construction of a new 2-story sludge dewatering building, a new primary clarifier with a new sludge pump pit, and a new emergency backup generator. In order to construct the clarifier in the planned location, the existing access road will be realigned to the southeast and a new retaining wall is planned to support the relocated access road. Detailed construction drawings were not available for our review at the time of this report. However, based on our understanding of the project and our discussions with you, we anticipate that excavations on the order of 10 and 15 feet will be needed to construct the new sludge pump pit and clarifier, respectively. Depending on the location and height of the retaining wall that is proposed to the east of the new clarifier, backfill behind the wall on the order of 10 feet may be needed. Excavations into the slope that descends from the existing sludge dewatering building on the order of 10 to 15 feet deep may be needed to construct the new 2-story sludge dewatering building. The approximate locations of the planned improvements are shown on Figure 2.

## **4 SUBSURFACE EVALUATION AND LABORATORY TESTING**

Our subsurface exploration at the site was performed on March 7, 2019, and consisted of the drilling, logging, and sampling of four small-diameter borings to depths of up to approximately 36½ feet below the surface. The borings were drilled using a truck mounted drill rig utilizing 8-inch-diameter hollow stem augers. The borings were excavated to evaluate the subsurface conditions and to collect samples for laboratory testing, and were logged by a representative from our firm. Bulk and relatively undisturbed soil and bedrock samples were obtained at selected depths for laboratory testing. The approximate locations of the borings are presented on Figure 2. The logs of the exploratory borings are presented in Appendix A.

Laboratory testing of representative soil samples included tests to evaluate in-situ moisture and density, percentage of particles finer than No. 200 sieve, sieve analysis, direct shear strength, soil corrosivity, and Proctor density. The results of our in-situ moisture content and dry density evaluation are presented on the boring logs in Appendix A. The remaining laboratory testing results are presented in Appendix B.

A seismic refraction survey was performed at the site on February 28, 2019 to evaluate the shear wave velocity of the subsurface materials and to evaluate depth to and rippability of bedrock

materials at the surveyed locations. The approximate location of our field seismic refraction tests are shown on Figure 2. The test results are presented in Appendix C.

## **5 GEOLOGIC AND SUBSURFACE CONDITIONS**

### **5.1 Regional Geologic Setting**

The project site is situated within the San Bernardino Mountains in the Transverse Ranges Geomorphic Province of California (California Geological Survey, 2002). The Transverse Ranges are characterized by east to west oriented blocks and intervening valleys that are generally bounded by east to west trending faults (Norris and Webb, 1990). The major structural fault systems bounding this area of the site are the Cleghorn fault zone to the north, the North Frontal Thrust System to the northeast, the Helendale-South Lockhard fault zone to the east, and the San Andreas fault to the south. Regional geologic mapping indicates that the site is underlain by Mesozoic-age mixed granitic rocks of Silverwood Lake (Morton and Miller, 2006). The granitic rock is described as very deeply weathered.

### **5.2 Site Geology**

Based on our review of regional geologic publications, and our subsurface exploration, the project area is underlain by fill and Mesozoic-age mixed granitic rock. Fill materials were encountered in our exploratory borings to depths of up to approximately 13 feet below the ground surface (bgs). The fill encountered consisted predominantly of clayey sand with varying amounts of gravel that was generally observed to be moist and loose. Granitic bedrock was encountered beneath the fill in our exploratory borings. The granitic rock was observed to be weathered and was generally recovered in the samples as poorly graded sand to silty sand. However, in boring B-1, the bedrock was decomposed to a residual soil that extended to approximately 13 feet bgs and generally consisted of moist, medium dense, silty sand. In borings B-1 and B-2, the weathered granitic bedrock transitioned to relatively fresh granitic bedrock at depths of approximately 26 feet and 19 feet bgs respectively. Difficult drilling conditions occurred in the less weathered granitic rock.

### **5.3 Groundwater**

Groundwater underlying the project site probably occurs within interconnected fractures of the granitic bedrock. Groundwater elevations typically conform to ground surface topography, but the depth to groundwater beneath the project site is dependent on the concentration and hydraulic connection of fractures with depth. During drilling, groundwater was encountered in our exploratory borings B-1 and B-2 at approximately 27.75 feet and 20 feet bgs respectively, and generally correlated with decreasing in weathering of the granitic rock. Groundwater was not encountered in borings B-3 or B-4. Fluctuations in the level of groundwater may occur due to

variations in ground surface topography, subsurface stratification, rainfall, irrigation practices, groundwater pumping, and other factors that may not have been evident at the time of our field evaluation.

## 6 RIPPABILITY

In order to evaluate the depth to bedrock and the rippability of the bedrock materials expected to be encountered during grading for the proposed structures, we performed two seismic refraction profiles (Figure 2). The profiles were performed using a 24-channel, digital seismograph with a 12-pound hammer impacting a steel plate as the energy source. A real-time noise monitor showing the geophones was checked during the survey to monitor noise levels from nearby traffic and other sources. Cross sections of the profiles are presented in Appendix C.

The modeled bedrock velocities indicated by our seismic profiles generally indicate that pressure-wave velocities are less than 4,000 feet per second. Based on our experience with granitic rock materials and based on the ripper performance charts provided in the Caterpillar Performance Handbook (Caterpillar, 2018), granitic bedrock materials with seismic velocities of less than approximately 6,000 feet per second are generally rippable by a Caterpillar D-8 dozer, or equivalent, with a single-shank ripper. However, it should be noted that rock characteristics, such as fracture spacing and orientation, play a significant role in rock rippability. Rippability will also be dependent on the excavation equipment used and the skill and experience of the equipment operator. Due to the history of blasting at the site, encountering areas of very hard granitic rock cannot be ruled out and should be planned for by the contractor.

## 7 SEISMICITY

The subject site is not located within a State of California Earthquake Fault Zone (formerly known as Alquist-Priolo Special Studies Zone) (Hart and Bryant, 1997). However, the site is located in a seismically active area, as is the majority of southern California, and the potential for strong ground motion in the project areas is considered significant during the design life of the proposed improvements. The approximate locations of major faults in the region and their geographic relationship to the site are shown on Figure 3.

Based on our document review, the active Cleghorn Fault Zone is located approximately 1.5 miles west of the site. Table 1 lists selected principal known active faults that may affect the subject site and the maximum moment magnitude ( $M_{max}$ ) as published by the United States Geological Survey (USGS, 2008). The approximate fault-to-site distances were calculated using the USGS fault parameters web-based design tool (USGS, 2008).

In addition to mapped faults shown on Figure 3, the Puente Hills blind thrust fault is located approximately 42.1 miles southwest of the site. Blind thrust faults are low-angle faults at depths that do not break the surface and are, therefore, not shown on Figure 3. Although blind thrust faults do not have a surface trace, they can be capable of generating damaging earthquakes and are included in Table 1.

<b>Fault</b>	<b>Approximate Fault-to-Site Distance miles (kilometers)</b>	<b>Maximum Moment Magnitude (Mmax)</b>
Cleghorn	1.4 (2.3)	6.8
North Frontal	4.3 (7.0)	7.2
San Andreas	4.8 (7.8)	8.2
San Jacinto	8.1 (13.0)	7.8
Cucamonga	11.1 (17.8)	6.7
Helendale	22.3 (35.8)	7.4
San Jose	25.9 (41.7)	6.7
Sierra Madre	28.4 (45.7)	7.2
Chino-Central Ave.	31.2 (50.2)	6.8
Clamshell-Sawpit	33.0 (53.0)	6.7
Elsinore	34.3 (55.2)	7.9
Pinto Mountain	34.4 (55.3)	7.3
Lenwood-Lockhart-Old Woman Springs	35.3 (56.8)	7.5
Johnson Valley	38.5 (61.9)	6.9
Raymond	41.7 (67.1)	6.8
Puente Hills Blind Thrust	42.2 (67.8)	6.9
Landers	43.2 (69.5)	7.4

The principal seismic hazards at the subject site are surface fault rupture and strong ground motion. Liquefaction is not a consideration for the project due to the shallow depth of bedrock at the site. A brief description of these hazards and the potential for their occurrences on site are discussed below.

## **7.1 Surface Ground Rupture**

Based on our review of the referenced literature and our site reconnaissance, no active faults are known to cross the project site. The active Cleghorn Fault Zone is located approximately 1.4 miles north of the site. Therefore, the probability of damage from surface ground rupture is considered to be low. However, lurching or cracking of the ground surface as a result of nearby seismic events is possible.

## **7.2 Ground Motion**

The 2016 California Building Code (CBC) specifies that the Risk-Targeted, Maximum Considered Earthquake (MCER) ground motion response accelerations be used to evaluate seismic loads for

design of buildings and other structures. The MCER ground motion response accelerations are based on the spectral response accelerations for 5 percent damping in the direction of maximum horizontal response and incorporate a target risk for structural collapse equivalent to 1 percent in 50 years with deterministic limits for near-source effects. The horizontal peak ground acceleration (PGA) that corresponds to the MCER for the site was calculated as 1.047g using the Structural Engineers Association of California and California Office of Statewide Health Planning and Development (SEAOC and OSHPD, 2019) seismic design tool (web-based). Spectral response acceleration parameters, consistent with the 2016 CBC, are also provided in Section 9.3 for the evaluation of seismic loads on structures.

### 7.3 Liquefaction Potential

Liquefaction is the phenomenon in which loosely deposited granular soils and non-plastic silts located below the water table undergo rapid loss of shear strength when subjected to strong earthquake-induced ground shaking. Ground shaking of sufficient duration results in the loss of grain-to-grain contact due to a rapid rise in pore water pressure, and causes the soil to behave as a fluid for a short period of time. Liquefaction is known generally to occur in saturated or near-saturated cohesionless soils at depths shallower than 50 feet. Factors known to influence liquefaction potential include composition and thickness of soil layers, grain size, relative density, groundwater level, degree of saturation, and both intensity and duration of ground shaking. Due to the mountainous terrain and shallow bedrock, the site is not located in an area considered susceptible to liquefaction.

## 8 CONCLUSIONS

Based on our evaluation, it is our opinion that proposed construction is feasible from a geotechnical perspective, provided the recommendations presented in this report are incorporated into the design and construction of the project.

The primary geotechnical considerations for the project include potential difficult excavating conditions in granitic rock and the potential for encountering groundwater during site grading. Due to the shallow granitic bedrock and history of blasting at the site, difficult excavating conditions should be anticipated. Granitic bedrock material was observed in our exploratory borings and difficult drilling conditions were encountered in areas where the bedrock material transitioned from weathered to more fresh bedrock materials. Blasting is generally required in excavating bedrock materials with shear wave velocities higher than 6,000 feet per second (fps). Although the shear wave velocity of the bedrock materials surveyed in our seismic survey were less than approximately 4,000 fps, encountering areas of harder rock is possible that may involve the use of specialty rock-breaking equipment. Due to the close proximity of the proposed improvements

to existing facilities and their possible susceptibility to damage from vibrations, blasting is not recommended.

Groundwater underlying the project site probably occurs within interconnected fractures of the granitic bedrock. Groundwater elevations typically conform to ground surface topography, but the depth to groundwater beneath the project site is dependent on the concentration and hydraulic connection of fractures with depth. Groundwater was encountered in two of our exploratory borings and should be anticipated during site grading due to the irregular and unpredictable nature of groundwater within granitic bedrock materials. The presence of groundwater at the site may be largely dependent on the amount of seasonal precipitation that has occurred at the site. Groundwater may or may not be encountered during site grading depending on the depths of excavation and when construction is performed.

In general, the following additional conclusions were made:

- The site is underlain by fill soils consisting of clayey sand, residual soil consisting of silty sand, and weathered and relatively fresh granitic bedrock.
- The existing fill and residual soils generally are composed of granular soils that may be subject to caving. These materials should be considered Type C soils in accordance with Occupational Safety and Health Administration (OSHA) soil classifications. Dense granitic rock may be considered Type A, stable rock.
- Based on materials observed during our site reconnaissance and encountered in our exploratory borings, excavations in fill, residual soil and weathered granitic bedrock are considered feasible with heavy duty equipment in good working order. However, difficult excavating conditions should be anticipated where less weathered bedrock is encountered in areas of deeper excavation. Weathered bedrock was observed in each of the borings, and relatively fresh bedrock was encountered in B-1 and B-2.
- Shallow perched groundwater may be present, as encountered in exploratory borings B-1 and B-2 at depths of approximately 20 feet and 27.75 feet, respectively. However, fluctuations in the groundwater level may occur as a result of variations in seasonal precipitation, irrigation practices, and other factors.
- The subject site is not located within a State of California Earthquake Fault Zone. Based on our review of published geologic maps and aerial photographs, no known active faults underlie the site. The probability of surface fault rupture at the site is considered to be low.
- The site modified PGA was estimated to be 1.047g based on the SEAOC and OSHPD (2019) ground motion calculator (web-based).
- Our limited laboratory corrosion testing indicates that the near-surface site soils should be considered non-corrosive based on California Department of Transportation (Caltrans, 2018) corrosion guidelines.



## **9 RECOMMENDATIONS**

The following sections present our geotechnical recommendations for construction of the proposed improvements. These recommendations are based on our evaluation of the site geotechnical conditions and our understanding of the proposed construction. The proposed construction should be performed in accordance with the recommendations presented in this report, project specifications, the Crestline Sanitation District, and appropriate agency standards.

### **9.1 Earthwork**

Earthwork at the site is anticipated to consist of the following:

- Excavations on the order of 10 to 15 feet deep for the proposed clarifier and sludge pump pit.
- Remedial grading to remove fill and loose native materials to competent bedrock in the area of the new retaining wall for the access road realignment.
- Cut and fill grading to create a pad for the proposed dewatering building,
- Excavation and backfill of trenches for new pipelines.

Earthwork operations should be performed in accordance with the requirements of applicable governing agencies and the recommendations presented in the following sections of this report. As noted above, detailed construction drawings were not available for our review. When construction drawings are available, they should be reviewed by Ninyo & Moore. Revised remedial grading recommendations may be appropriate.

#### **9.1.1 Pre-Construction Conference**

We recommend that a pre-construction conference be held. The owner and/or their representative, the governing agencies' representatives, the civil engineer, Ninyo & Moore, and the contractor should be in attendance to discuss the work plan and project schedule and earthwork requirements.

#### **9.1.2 Site Preparation**

Prior to performing excavations or other earthwork, the site should be cleared of existing fill soils, debris, vegetation, and loose or otherwise unsuitable soils. Obstructions that extend below the finished grade should be removed and the resulting holes filled with compacted soil. Materials generated from the clearing operations should be removed from the project site and disposed of at a legal dump site.



### **9.1.3 Remedial Grading for Proposed Structures**

Remedial grading is recommended to remove undocumented fill and loose surficial soils to competent bedrock materials in the area of the new dewatering building. Similarly, remedial grading is also recommended to remove existing undocumented fill materials that were encountered in boring B-4 to prepare the site for the proposed retaining wall that will be constructed to realign the access road at the site. Based on boring B-3, bedrock is anticipated to be exposed during excavation for the proposed clarifier and additional remedial grading below these depths may not be needed based on excavation depths of 10 to 15 feet.

Where the planned excavations to foundation subgrade do not extend into competent bedrock, the undocumented fill and loose, decomposed granitic rock should be removed and recompacted within the influence zone of the proposed structures. The overexcavation should extend down to relatively dense granitic rock to provide suitable support for compacted fills and other improvements. The excavation bottom should be evaluated by our representative during construction. Additional overexcavation of loose, soft, wet and/or undocumented fill may be appropriate depending on the conditions exposed during grading. The exposed subgrade should be scarified to approximately 8 inches deep, moisture conditioned, and compacted prior to the placement of new fill. The limits of the excavation should extend laterally so that the bottom of the excavation is approximately 2 feet beyond the areas to receive fill or a distance equal to the depth of the overexcavation, whichever is farther.

### **9.1.4 Excavation Characteristics**

Based on our exploratory borings, we anticipate that excavation within the fill and granitic bedrock materials present on site may generally be accomplished with grading equipment in good operating condition. We anticipate that the subsurface soils will generally consist of granular soils and decomposed to weathered granitic rock that will generally disaggregate upon excavation and processing. However, based on our experience, the degrees of weathering, decomposition, and hardness of granitic rock may vary widely with relatively abrupt changes on a site. Granitic rock with lesser degrees of weathering may involve special excavating equipment, such as rippers, pneumatic chippers and jackhammers. Blasting is not recommended due to the relatively close proximity to existing facilities and their susceptibility to damage from excessive vibrations. Therefore, additional effort using rock-breaking equipment should be anticipated and planned for by contractor.

Excavating difficulty will also depend on the degree of fracturing/jointing in the granitic rock. Excavations in granitic rock are anticipated to generate oversize rock fragments that are not

generally suitable for fill material. During excavations, the contractor should anticipate encountering oversized materials, including cobbles and debris in the existing fills, and zones of hard granitic rock. Boulders were also observed on the ground surface in the natural slope areas and should be anticipated. The contractor should be prepared to take appropriate measures to address the presence of oversized materials and hard, granitic materials.

#### **9.1.5 Excavation Stability/Temporary Shoring**

We recommend that trenches and excavations be designed and constructed in accordance with OSHA regulations. These regulations provide trench sloping and shoring design parameters for excavations up to 20 feet deep based on the soil types encountered. Excavations should be designed by the contractor's engineer based on site-specific geotechnical analyses. For planning purposes, we recommend that on-site fill materials be considered as OSHA Type C soil. Dense granitic rock may be considered Type A, stable rock. However, excavations exposing granitic rock should be observed by Ninyo & Moore's engineering geologist to evaluate potential wedge failure along fractures and joints within the bedrock.

It is our opinion that temporary slopes in the fill and weathered bedrock, above zones of seepage / groundwater, should be stable at inclinations of approximately 1.5:1 (horizontal to vertical) or flatter. Some surficial sloughing may occur. Temporary slopes should be evaluated in the field in accordance with OSHA criteria. Where temporary excavations cannot be sloped as indicated above, temporary shoring may be appropriate for the excavations.

The contractor should retain a qualified and experienced engineer to design the shoring system. We recommend that the contractor take appropriate measures to protect workers. OSHA requirements pertaining to worker safety should be observed.

#### **9.1.6 Construction Dewatering**

Groundwater or seepage may be encountered during site grading depending on the depths of excavation and the seasonal precipitation prior to site grading. The contractor should be prepared to take appropriate measures in the event that seepage is encountered during excavation operations. If seepage results in a significant accumulation of nuisance water within the grading areas or pipeline alignments and is affecting earthwork production rates, the contractor may consider temporary dewatering. Recommendations for temporary dewatering should be provided based on actual field conditions encountered during construction. However, we anticipate that nuisance water can be directed to a suitable area via temporary swales and can then be removed from the excavation area with a sump pump.

and pumped to a suitable discharge area. Disposal of groundwater should be performed in accordance with guidelines of the Regional Water Quality Control Board.

### **9.1.7 Fill Material**

In general, the on-site soils should be suitable for use as fill materials provided the soils are free of trash, debris, roots, contamination, deleterious materials, and cobbles or hard lumps of material over 4 inches in diameter. Cobbles or hard lumps larger than 4 inches should be broken into small fragments or removed from the site. Wet soils, or soil with a relatively high moisture content, may be encountered during excavation. These soils should be allowed to dry to near the laboratory optimum moisture content prior to their placement as backfill. In the event that drying of on-site soil is not feasible, imported granular soil should be used for backfill.

Imported soil should consist of clean, granular material that generally meets Standard Specifications for Public Works Construction (Greenbook) criteria for structure backfill. Soil should also be tested for corrosive properties prior to importing. We recommend that the imported materials meet the Caltrans (2018) criteria for non-corrosive soils (i.e., soils having a chloride concentration of 500 parts per million (ppm) or less, a soluble sulfate content of approximately 0.20 percent (2,000 ppm) or less, a pH value of 5.5 or higher, and a resistivity of 1,100 ohm-centimeters [ohm-cm] or higher). Materials for use as fill should be evaluated by the project geotechnical consultant prior to importing. The contractor should be responsible for the uniformity of import material brought to the site.

### **9.1.8 Fill Placement and Compaction**

Fill material, including trench backfill, should be moisture conditioned and compacted in horizontal lifts to a relative compaction of 90 percent or more as evaluated by ASTM International (ASTM) D 1557. Fill material should be moisture-conditioned to slightly above the laboratory optimum moisture content. The lift thickness for fill soils will depend on the type of compaction equipment used but generally should not exceed 8 inches in loose thickness. Special care should be exercised to avoid damaging pipes during compaction of trench backfill. Placement and compaction of the fill soils should be in general accordance with applicable grading ordinances and good construction practice.

## **9.2 Underground Utilities**

We anticipate that utility pipelines will be installed as a part of the subject project that will be supported on compacted fill or granitic bedrock. The depths of the pipelines are not known; however, we anticipate that the pipe invert depths will not exceed 10 feet. Trenches should not be

excavated adjacent to footing foundations of existing structures or earthen berms. If needed, trenches can be excavated adjacent to a continuous footing or berms provided that the bottom of the trench is located above a 1:1 plane projected downward from the bottom of the adjacent footing or toe of the berm. Utility lines that cross beneath footings or berms should be encased in concrete below the footing/berm.

### **9.2.1 Pipe Bedding**

We recommend that bedding material be placed around pipe zones 1 foot or more above the top of the pipe. The bedding material should be classified as sand, be generally free of organic material, and have a sand equivalent (SE) of 30 or more. We do not recommend crushed rock be used for bedding material because of the fine-grained nature of the subsurface material. It has been our experience that the voids within a crushed rock material are sufficiently large to allow fines to migrate into the voids, thereby creating the potential for sinkholes and depressions to develop at the ground surface. Where soft, wet soil conditions are encountered, the trench excavation should be excavated approximately 1 to 2 feet or more below the pipe invert and should be backfilled with gravel wrapped in filter fabric.

Special care should be taken not to allow voids beneath and around the pipe. Compaction of the bedding material and backfill should proceed up both sides of the pipe. Trench backfill, including bedding material, should be placed in accordance with the recommendations presented in the preceding section.

### **9.2.2 Modulus of Soil Reaction for Pipe Design**

The modulus of soil reaction is used to characterize the stiffness of soil backfill placed at the sides of buried flexible pipelines for the purpose of evaluating deflection caused by the weight of the backfill above the pipe. A soil reaction modulus of 1,000 pounds per square inch (psi) may be used for an excavation depth of up to about 5 feet when backfilled with granular soil and compacted. A soil reaction modulus of 1,200 psi may be used for trenches deeper than 5 feet.

## **9.3 Seismic Design Considerations**

Design of the proposed improvements should be performed in accordance with the requirements of governing jurisdictions and applicable building codes. Table 2 presents the seismic design parameters for the site in accordance with the CBC (2016) guidelines and adjusted  $MCE_R$  spectral response acceleration parameters (SEAOC and OSHPD, 2019).

**Table 2 – 2016 California Building Code Seismic Design Criteria**

Seismic Design Factors	Value
Site Class	B
Site Coefficient, $F_a$	1.0
Site Coefficient, $F_v$	1.0
Mapped Spectral Acceleration at 0.2-second Period, $S_s$	2.902g
Mapped Spectral Acceleration at 1.0-second Period, $S_1$	0.998g
Spectral Acceleration at 0.2-second Period Adjusted for Site Class, $S_{MS}$	2.902g
Spectral Acceleration at 1.0-second Period Adjusted for Site Class, $S_{M1}$	0.998g
Design Spectral Response Acceleration at 0.2-second Period, $S_{DS}$	1.935g
Design Spectral Response Acceleration at 1.0-second Period, $S_{D1}$	0.666g

## 9.4 Foundations

The proposed dewatering building and primary clarifier may be supported on shallow foundations including continuous footings, spread footings and mat foundation bearing on compacted fill or competent granitic bedrock in accordance with the recommendations presented in the Earthwork section of this report. Due to the irregular and variable nature of the granitic bedrock, rough and uneven excavation bottoms should be anticipated. Crushed rock or gravel may be used to create a relatively flat surface for foundations in the rough excavation bottoms. Where a foundation excavation only partially exposes dense granitic rock, foundations should either be founded on approximately 2 feet of compacted fill or deepened to extend into competent bedrock material. Foundations should be designed in accordance with structural considerations and the following recommendations. In addition, requirements of the appropriate governing jurisdictions and applicable building codes should be considered in the design of the structures.

### 9.4.1 Spread Footings

Spread footings for building structures should extend 24 inches or more below the adjacent finished grade and bear on compacted fill or competent granitic rock. Continuous and isolated pad footings should have a width of 24 inches and 36 inches or more, respectively. Spread footings should be reinforced with two No. 4 steel reinforcing bars, one placed near the top and one placed near the bottom of the footings, and further detailed in accordance with the recommendations of the structural engineer.

Footings, as described above and bearing on compacted fill or competent granitic bedrock, may be designed using an allowable bearing capacity of 5,000 pounds per square foot (psf). The allowable bearing capacity may be increase by 400 and 800 psf for each additional foot of width and depth, respectively, tap to a value of 8,000 psf. The allowable bearing capacity may be increased by one-third when considering loads of short duration such as wind or

seismic forces. Total and differential settlement for footings under static load are estimated to be less than approximately 1 inch and ½ inch over a horizontal span of 40 feet, respectively.

Footings bearing on compacted fill or granitic bedrock may be designed using a coefficient of friction of 0.35, where the total frictional resistance equals the coefficient of friction times the dead load. Footings may be designed using a passive resistance of 350 psf per foot of depth for level ground condition up to a value of 3,500 psf. The allowable lateral resistance can be taken as the sum of the frictional resistance and passive resistance provided the passive resistance does not exceed one-half of the total allowable resistance. The passive resistance may be increased by one-third when considering loads of short duration such as wind or seismic forces.

#### **9.4.2 Mat Foundation**

Mat foundations for below grade structures such as the clarifier may be designed assuming an allowable bearing capacity of 8,000 pounds per square foot (psf). The allowable bearing capacity is for design of the net bearing pressure imposed on the soils beneath the foundation. The weight of the footing has been considered in the capacity. The anticipated total and differential settlements corresponding to this allowable bearing load is estimated to be approximately 1 inch and ½ inch, respectively.

Mat foundations for the above grade structures may be supported directly on compacted fill soil or competent granitic rock. Mat foundations typically experience some deflection due to loads placed on the mat and the reaction of the soils directly underlying the mat. For buildings supported by mat foundations, a modulus of subgrade reaction of 250 kips per cubic foot (kcf) may be utilized for design.

### **9.5 Retaining Walls**

Retaining walls may be supported by spread footings founded in compacted fill or competent granitic rock. Spread footings for retaining walls should be founded at a depth of 24 inches or more below lowest adjacent grade, and should be 24 inches or more in width. Footings founded as recommended may be designed for an allowable soil bearing pressure of 5,000 psf.

Recommendations for lateral earth pressures to be used in design of the retaining walls are provided on Figure 4. Lateral soil resistance may be obtained using a passive pressure of 350 pounds per square foot per foot of depth for level backfill conditions. The passive value may be increased by one-third when considering loads of short duration, including wind and seismic

loads. Further, for sliding resistance, a friction coefficient of 0.35 may be used for the concrete and soil interface. The allowable resistance may be taken as the sum of the frictional and passive resistance provided that the passive portion does not exceed one-half of the total allowable resistance.

Retaining walls should be backfilled with granular, low expansion potential soil. Measures should be taken to reduce the potential for build-up of moisture behind the retaining walls. Drainage design should include free-draining backfill materials and perforated drains as described on Figure 5.

## 9.6 Corrosivity

Laboratory testing was performed on representative samples of near-surface soil to evaluate soil pH, electrical resistivity, water-soluble chloride content, and water-soluble sulfate content. The soil pH and electrical resistivity tests were performed in general accordance with California Test Method (CT) 643. Chloride content tests were performed in general accordance with CT 422. Sulfate testing was performed in general accordance with CT 417.

The pH of the tested sample was measured at approximately 6.4, the electrical resistivity was measured at approximately 11,432 ohm-centimeters, the chloride content was measured at approximately 120 ppm, and the sulfate content was measured at approximately 0.007 percent (i.e., 40 ppm). Based on the laboratory test results and Caltrans (2018) corrosion criteria, the project site can be classified as a non-corrosive site, which is defined as having earth materials with less than 500 ppm chlorides, less than 0.20 percent sulfates (i.e., 2,000 ppm), a pH of 5.5 or more, or an electrical resistivity of 1,100 ohm-centimeters or more. If corrosion-susceptible improvements are planned on site, we recommend that a corrosion engineer be consulted for further evaluation and recommendations.

## 9.7 Concrete Placement

Concrete in contact with soil or water that contains high concentrations of soluble sulfates can be subject to chemical and/or physical deterioration. Based on the CBC criteria (2016) and American Concrete Institute (ACI) criteria (ACI, 2012), the potential for sulfate attack is considered negligible for water-soluble sulfate contents in soil less than 0.10 percent by weight (1,000 ppm). The sample tested during this evaluation indicated water-soluble sulfate contents of approximately 0.007 percent by weight (i.e., about 70 ppm). Accordingly, the on-site soils are considered to have a negligible potential for sulfate attack. However, due to the potential variability in soil conditions across the site, we recommend that Type V cement with a water/cement ratio of 0.45 or less be considered for the project.



In order to reduce the potential for shrinkage cracks in the concrete during curing, we recommend that the concrete be placed with a slump of 4 inches based on ASTM C 143. The slump should be checked periodically at the site prior to concrete placement. We also recommend that crack control joints be provided in concrete sidewalks in accordance with the recommendations of the project structural engineer to reduce the potential for distress due to minor soil movement and concrete shrinkage. The project structural engineer should be consulted for additional concrete specifications.

## 9.8 Drainage

Proper surface drainage is imperative for satisfactory site performance. Positive drainage should be provided and maintained to direct surface water away from the new sidewalk and retaining wall improvements. Positive drainage is defined as a slope of 2 percent or more over a distance of 5 feet away from the foundations and tops of slopes. Runoff should then be directed by the use of swales or pipes into a collective drainage system. Surface waters should not be allowed to pond adjacent to footings or pavements.

## 10 CONSTRUCTION OBSERVATION

The recommendations provided in this report are based on our understanding of the proposed project and on our evaluation of the data collected based on subsurface conditions disclosed by four exploratory borings. It is imperative that the interpolated subsurface conditions be checked by a qualified person during construction. Observation of foundation excavations and observation and testing of compacted fill and backfill should be performed by a qualified person during construction. In addition, the project plans and specifications should be reviewed by Ninyo & Moore to check for conformance with the recommendations of this report prior to construction. It should be noted that, upon review of these documents, some recommendations presented in this report might be revised or modified.

During construction we recommend that the duties of the geotechnical consultant include, but not be limited to:

- Observing remedial grading and excavation bottoms and the placement and compaction of fill, including trench backfill.
- Evaluating imported materials prior to their use as fill, if used.
- Performing field tests to evaluate fill compaction.
- Observing foundation excavations for bearing materials and cleaning prior to placement of reinforcing steel or concrete.



- Observing retaining wall subdrain construction and backfill.

## 11 LIMITATIONS

The field evaluation, laboratory testing, and geotechnical analyses presented in this geotechnical report have been conducted in general accordance with current practice and the standard of care exercised by geotechnical consultants performing similar tasks in the project area. No warranty, expressed or implied, is made regarding the conclusions, recommendations, and opinions presented in this report. There is no evaluation detailed enough to reveal every subsurface condition. Variations may exist and conditions not observed or described in this report may be encountered during construction. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface evaluation will be performed upon request.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Ninyo & Moore should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document.

This report is intended for design purposes only. It does not provide sufficient data to prepare an accurate bid by contractors. It is suggested that the bidders and their geotechnical consultant perform an independent evaluation of the subsurface conditions in the project areas. The independent evaluations may include, but not be limited to, review of other geotechnical reports prepared for the adjacent areas, site reconnaissance, and additional exploration and laboratory testing.

Our conclusions, recommendations, and opinions are based on an analysis of the observed site conditions. If geotechnical conditions different from those described in this report are encountered, our office should be notified, and additional recommendations, if warranted, will be provided upon request. It should be understood that the conditions of a site could change with time as a result of natural processes or the activities of man at the subject site or nearby sites. In addition, changes to the applicable laws, regulations, codes, and standards of practice may occur due to government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Ninyo & Moore has no control.

This report is intended exclusively for use by the client. Any use or reuse of the findings, conclusions, and/or recommendations of this report by parties other than the client is undertaken at said parties' sole risk.

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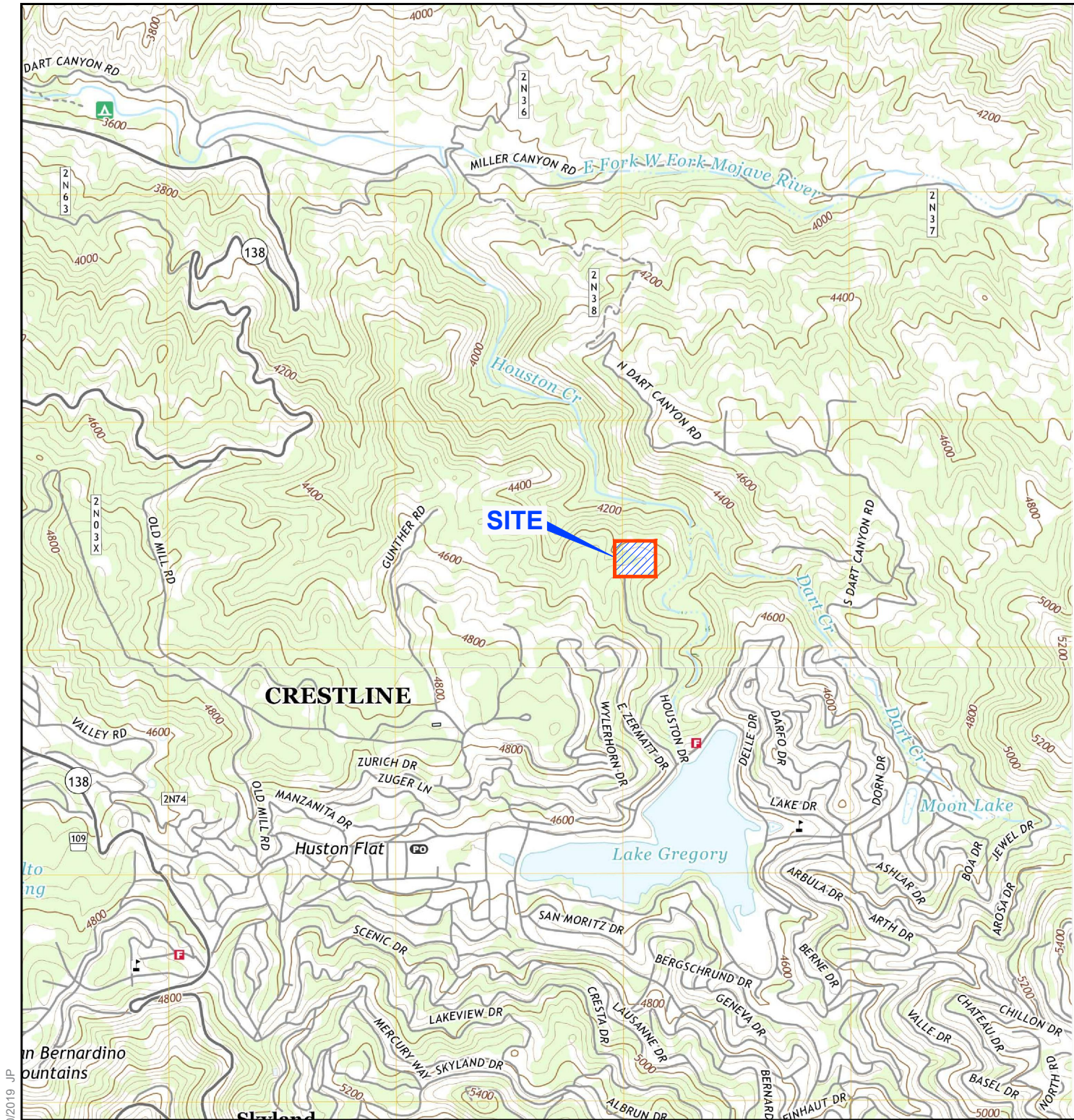
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# FIGURES





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NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. | REFERENCE: USGS, 2018.

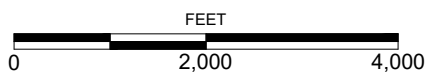


FIGURE 1

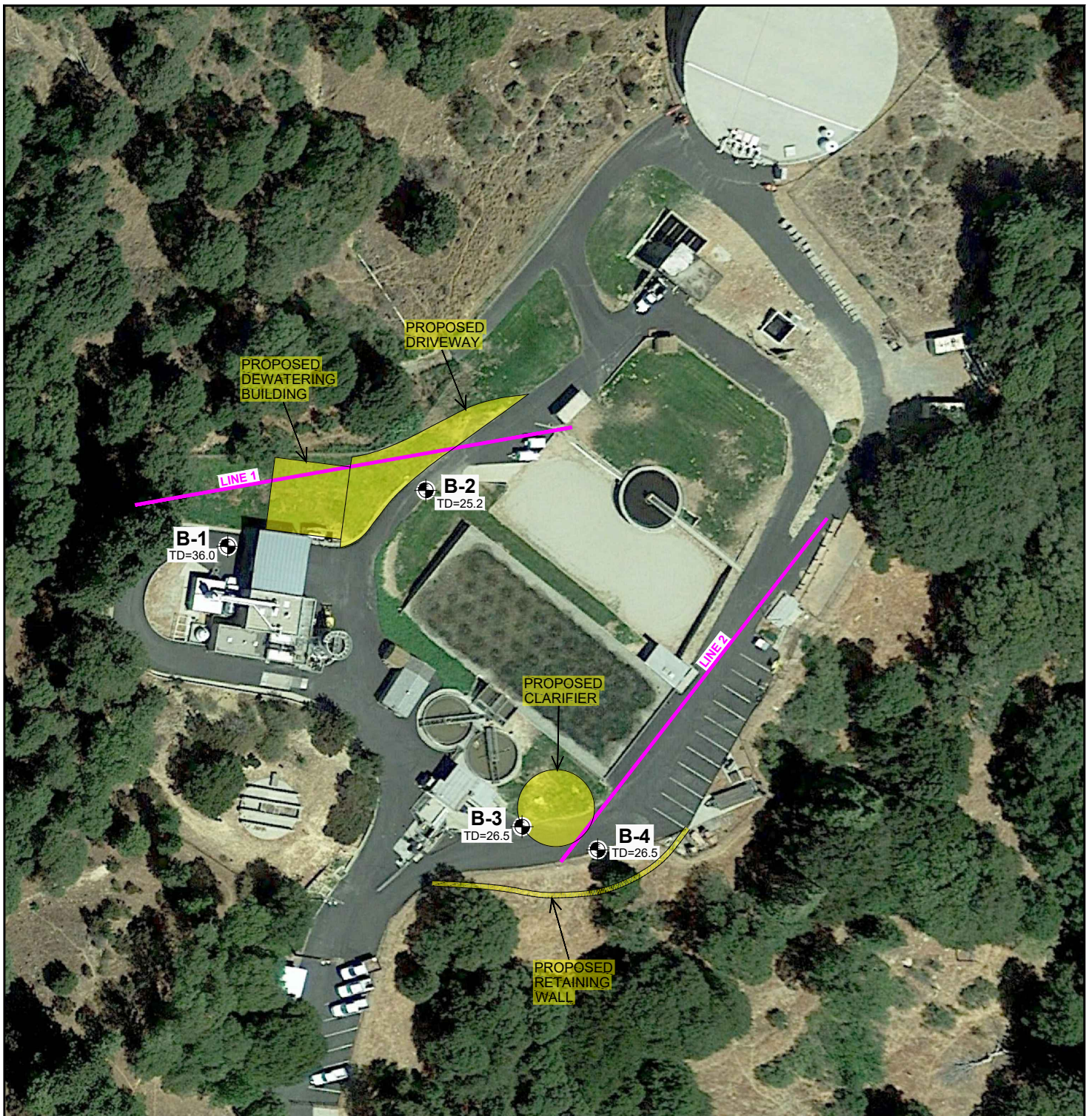
## SITE LOCATION

HOUSTON CREEK WASTE WATER TREATMENT PLANT  
CRESTLINE, CALIFORNIA



210950001 | 8/19



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#### LEGEND

- B-4**  BORING;  
TD=26.5 TD=TOTAL DEPTH IN FEET
-  **LINE 2** SEISMIC REFRACTION LINE

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. | REFERENCE: GOOGLE EARTH, 2019.

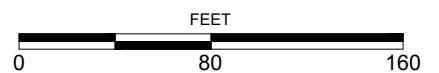
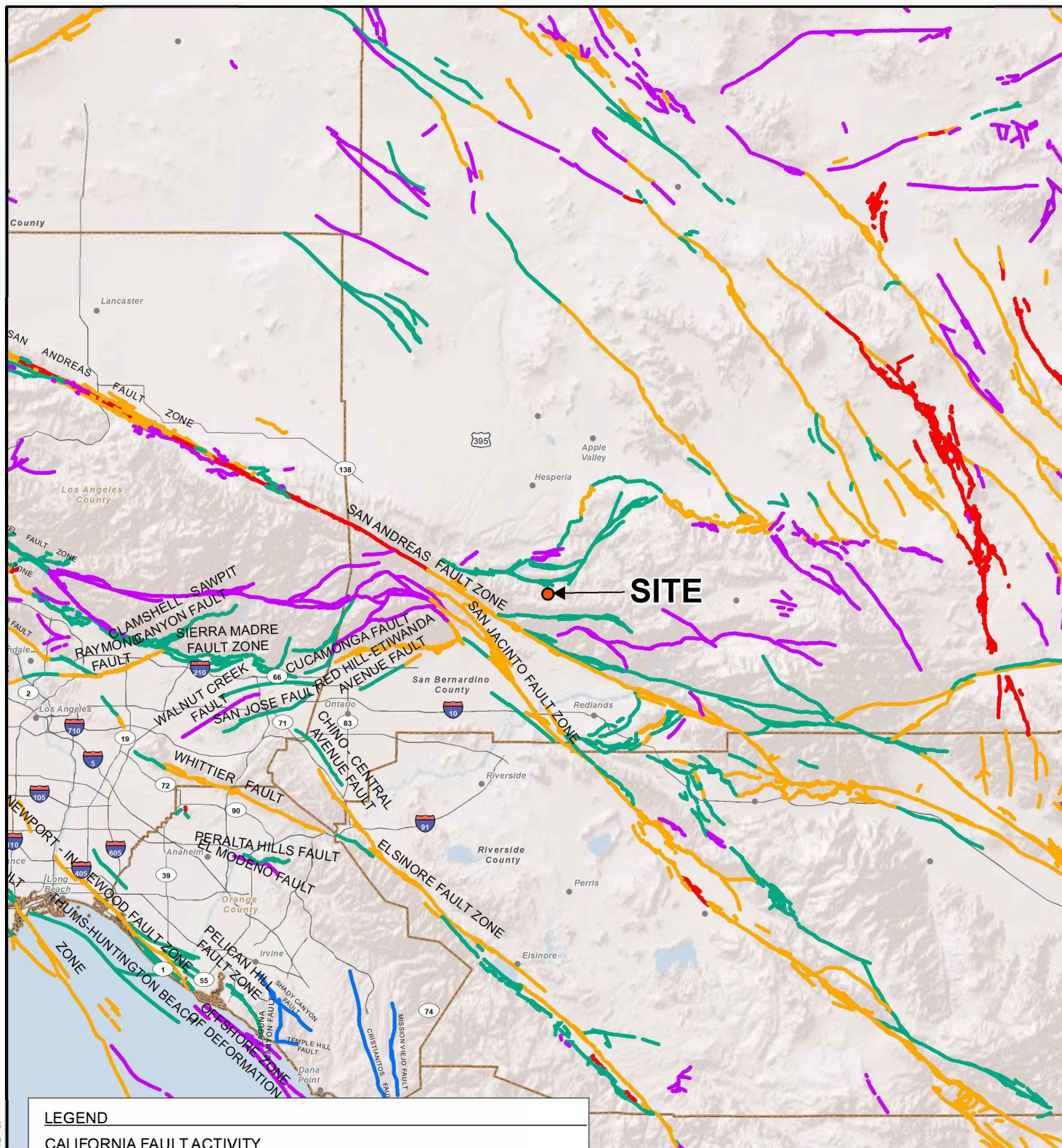


FIGURE 2



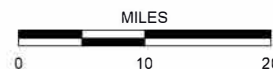


#### LEGEND

##### CALIFORNIA FAULT ACTIVITY

- |   |  |
|---|--|
| <span style="color: red;">—</span> HISTORICALLY ACTIVE                    | <span style="color: magenta;">—</span> QUATERNARY (POTENTIALLY ACTIVE) |
| <span style="color: orange;">—</span> HOLOCENE ACTIVE                     | <span style="color: blue;">—</span> QUATERNARY (INACTIVE)              |
| <span style="color: green;">—</span> LATE QUATERNARY (POTENTIALLY ACTIVE) | <span style="color: brown;">—</span> STATE/COUNTY BOUNDARY             |

SOURCES: CALIFORNIA DIVISION OF MINES AND GEOLOGY, 1976, ENVIRONMENTAL GEOLOGY OF ORANGE COUNTY, CALIFORNIA, OPEN FILE REPORT 79-8.; JENNINGS, C.W., AND BRYANT, 2010, FAULT ACTIVITY MAP OF CALIFORNIA; ESRI SHADED RELIEF, 2017



NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE.

**FIGURE 3**

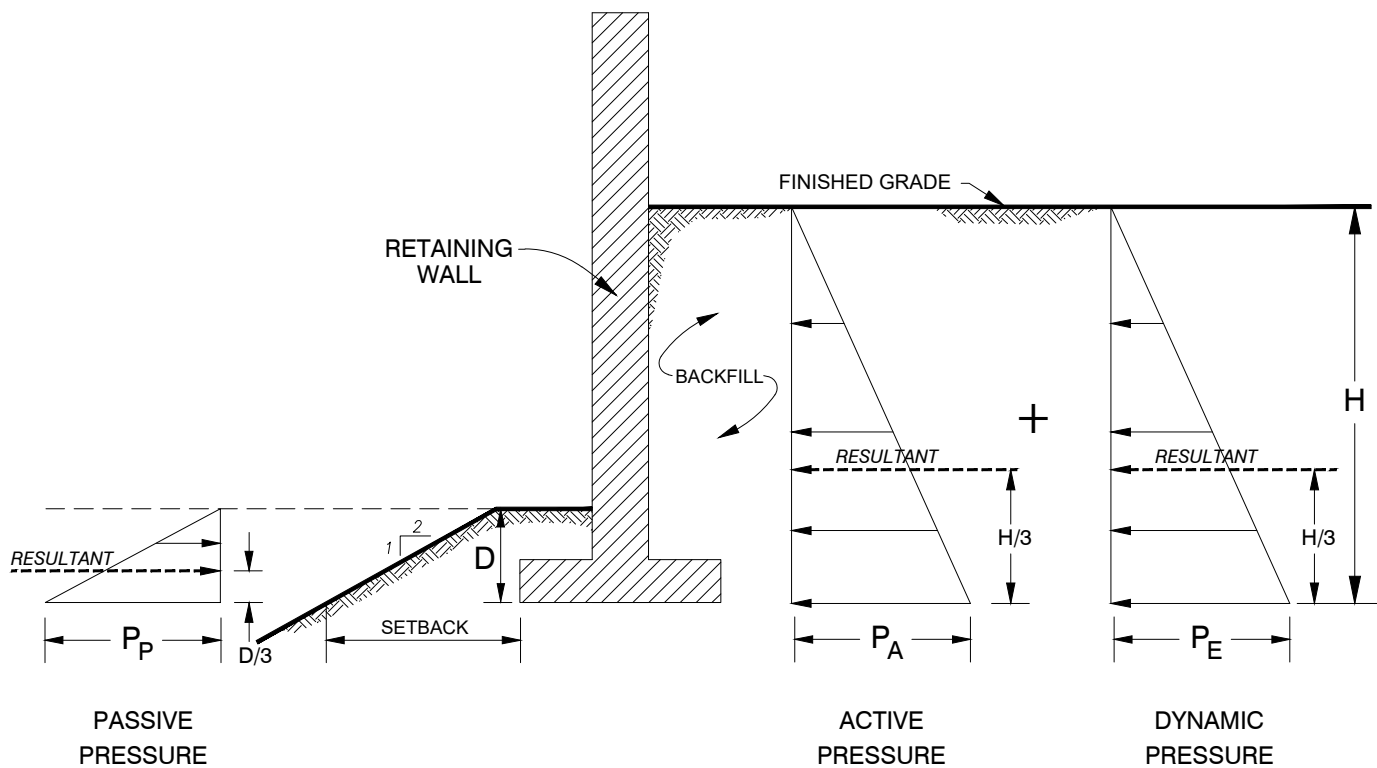
#### FAULT LOCATIONS

HOUSTON CREEK WASTE WATER TREATMENT PLANT  
CRESTLINE, CALIFORNIA

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#### NOTES:

1. ASSUMES NO HYDROSTATIC PRESSURE BUILD-UP BEHIND THE RETAINING WALL
2. STRUCTURAL, GRANULAR BACKFILL MATERIALS AS SPECIFIED IN GREENBOOK SHOULD BE USED FOR RETAINING WALL BACKFILL
3. DRAINS AS RECOMMENDED IN THE RETAINING WALL DRAINAGE DETAIL SHOULD BE INSTALLED BEHIND THE RETAINING WALL
4. DYNAMIC LATERAL EARTH PRESSURE IS BASED ON A PEAK GROUND ACCELERATION OF  $0.7g$
5.  $P_E$  IS CALCULATED IN ACCORDANCE WITH THE RECOMMENDATIONS OF MONONOBE AND MATSUO (1929), AND ATKIN AND SITAR (2010).
6. SURCHARGE PRESSURES CAUSED BY VEHICLES OR NEARBY STRUCTURES ARE NOT INCLUDED
7.  $H$  AND  $D$  ARE IN FEET
8. SETBACK SHOULD BE IN ACCORDANCE WITH FIGURE 1808.7.1 OF THE IBC (2015)

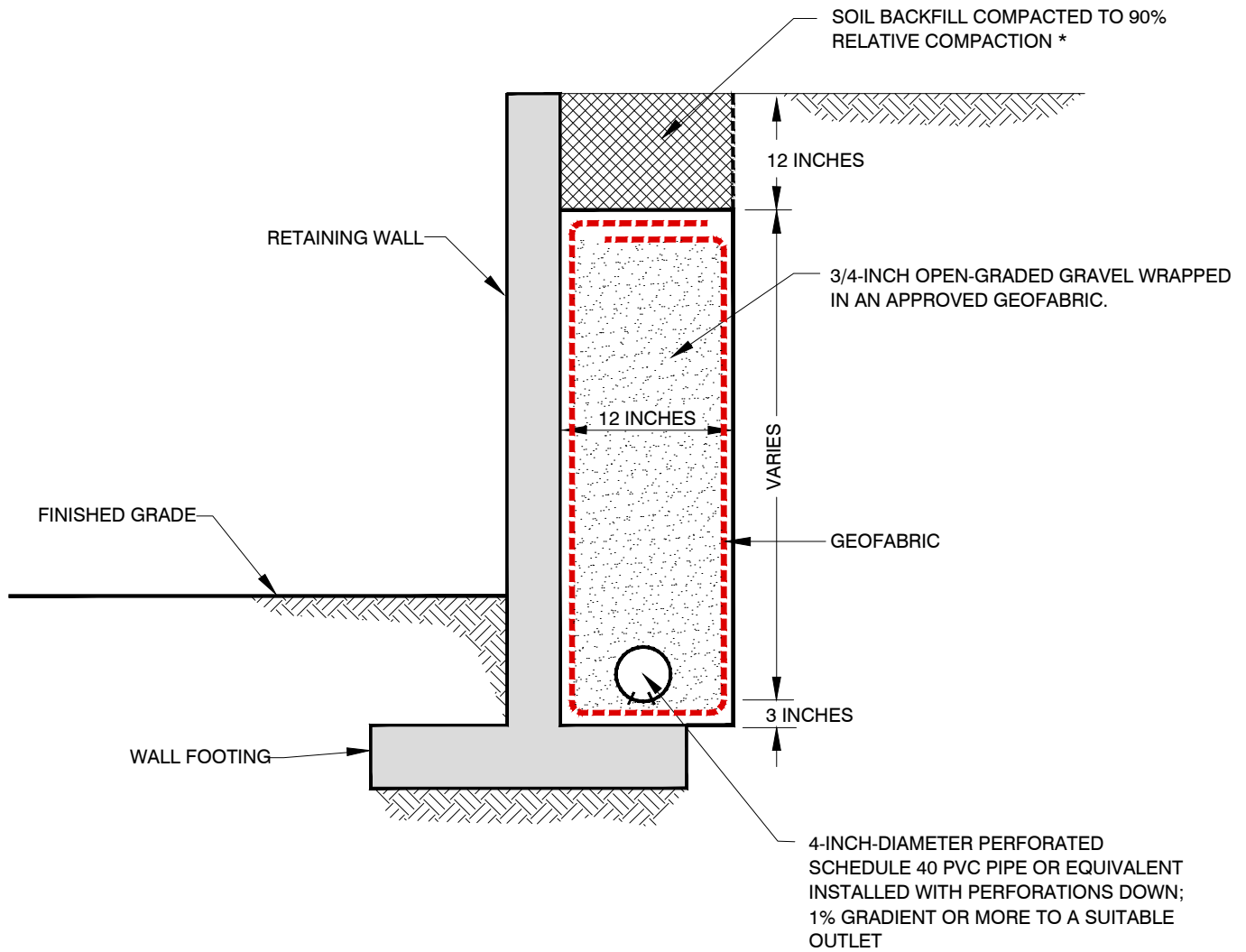
#### RECOMMENDED GEOTECHNICAL DESIGN PARAMETERS

Lateral Earth Pressure	Equivalent Fluid Pressure ( $\text{lb/ft}^2/\text{ft}^{(1)}$ )	
$P_A$	Level Backfill with Granular Soils <sup>(2)</sup>	2H:1V Sloping Backfill with Granular Soils <sup>(2)</sup>
	38 H	60 H
$P_E$	20 H	20 H
$P_P$	Level Ground	2H:1V Descending Ground
	350 D	150 D

NOT TO SCALE

FIGURE 4

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\*BASED ON ASTM D1557

NOT TO SCALE

FIGURE 5

## RETAINING WALL DRAINAGE DETAIL

HOUSTON CREEK WASTE WATER TREATMENT PLANT  
CRESTLINE, CALIFORNIA



# APPENDIX A

## Boring Logs

# APPENDIX A

## BORING LOG

### **Field Procedure for the Collection of Disturbed Samples**

Disturbed soil samples were obtained in the field using the following method.

#### **Bulk Samples**

Bulk samples of representative earth materials were obtained from the exploratory borings. The samples were bagged and transported to the laboratory for testing.

#### **The Standard Penetration Test (SPT) Sampler**

Disturbed drive samples of earth materials were obtained by means of a Standard Penetration Test sampler. The sampler is composed of a split barrel with an external diameter of 2 inches and an unlined internal diameter of 1-3/8 inches. The sampler was driven into the ground 12 to 18 inches with a 140-pound hammer falling freely from a height of 30 inches in general accordance with ASTM D 1586. The blow counts were recorded for every 6 inches of penetration; the blow counts reported on the logs are those for the last 12 inches of penetration. Soil samples were observed and removed from the sampler, bagged, sealed and transported to the laboratory for testing.

### **Field Procedure for the Collection of Relatively Undisturbed Samples**

Relatively undisturbed soil samples were obtained in the field using the following method.

#### **The Modified Split-Barrel Drive Sampler**

The sampler, with an external diameter of 3 inches, was lined with 1-inch-long, thin brass rings with inside diameters of approximately 2.4 inches. The sample barrel was driven into the ground with the weight of a hammer in general accordance with ASTM D 3550-01. The driving weight was permitted to fall freely. The approximate length of the fall, the weight of the hammer, and the number of blows per foot of driving are presented on the boring logs as an index to the relative resistance of the materials sampled. The samples were removed from the sample barrel in the brass rings, sealed, and transported to the laboratory for testing.

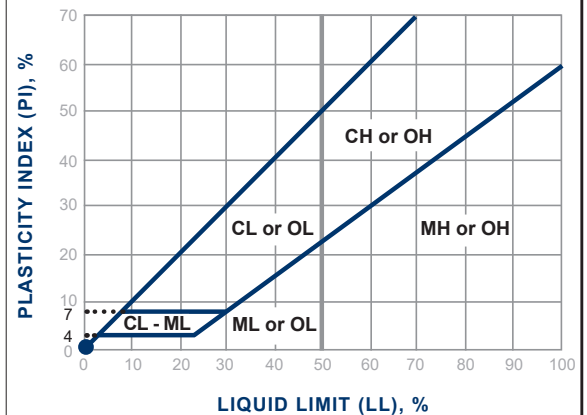
## Soil Classification Chart Per ASTM D 2488

Primary Divisions			Secondary Divisions	
			Group Symbol	Group Name
<b>COARSE-GRAINED SOILS</b> more than 50% retained on No. 200 sieve	<b>GRAVEL</b> more than 50% of coarse fraction retained on No. 4 sieve	CLEAN GRAVEL less than 5% fines	GW	well-graded GRAVEL
			GP	poorly graded GRAVEL
		GRAVEL with DUAL CLASSIFICATIONS 5% to 12% fines	GW-GM	well-graded GRAVEL with silt
			GP-GM	poorly graded GRAVEL with silt
			GW-GC	well-graded GRAVEL with clay
			GP-GC	poorly graded GRAVEL with clay
		GRAVEL with FINES more than 12% fines	GM	silty GRAVEL
			GC	clayey GRAVEL
			GC-GM	silty, clayey GRAVEL
	<b>SAND</b> 50% or more of coarse fraction passes No. 4 sieve	CLEAN SAND less than 5% fines	SW	well-graded SAND
			SP	poorly graded SAND
		SAND with DUAL CLASSIFICATIONS 5% to 12% fines	SW-SM	well-graded SAND with silt
			SP-SM	poorly graded SAND with silt
			SW-SC	well-graded SAND with clay
			SP-SC	poorly graded SAND with clay
		SAND with FINES more than 12% fines	SM	silty SAND
			SC	clayey SAND
			SC-SM	silty, clayey SAND
<b>FINE-GRAINED SOILS</b> 50% or more passes No. 200 sieve	<b>SILT and CLAY</b> liquid limit less than 50%	INORGANIC	CL	lean CLAY
			ML	SILT
			CL-ML	silty CLAY
		ORGANIC	OL (PI > 4)	organic CLAY
			OL (PI < 4)	organic SILT
	<b>SILT and CLAY</b> liquid limit 50% or more	INORGANIC	CH	fat CLAY
			MH	elastic SILT
		ORGANIC	OH (plots on or above "A"-line)	organic CLAY
			OH (plots below "A"-line)	organic SILT
		Highly Organic Soils	PT	Peat

## Grain Size

Description		Sieve Size	Grain Size	Approximate Size
Boulders		> 12"	> 12"	Larger than basketball-sized
Cobbles		3 - 12"	3 - 12"	Fist-sized to basketball-sized
Gravel	Coarse	3/4 - 3"	3/4 - 3"	Thumb-sized to fist-sized
	Fine	#4 - 3/4"	0.19 - 0.75"	Pea-sized to thumb-sized
Sand	Coarse	#10 - #4	0.075 - 0.19"	Rock-salt-sized to pea-sized
	Medium	#40 - #10	0.017 - 0.075"	Sugar-sized to rock-salt-sized
	Fine	#200 - #40	0.0029 - 0.017"	Flour-sized to sugar-sized
Fines		Passing #200	< 0.0029"	Flour-sized and smaller

## Plasticity Chart



## Apparent Density - Coarse-Grained Soil

Apparent Density	Spooling Cable or Cathead		Automatic Trip Hammer	
	SPT (blows/foot)	Modified Split Barrel (blows/foot)	SPT (blows/foot)	Modified Split Barrel (blows/foot)
Very Loose	≤ 4	≤ 8	≤ 3	≤ 5
Loose	5 - 10	9 - 21	4 - 7	6 - 14
Medium Dense	11 - 30	22 - 63	8 - 20	15 - 42
Dense	31 - 50	64 - 105	21 - 33	43 - 70
Very Dense	> 50	> 105	> 33	> 70

## Consistency - Fine-Grained Soil

Consistency	Spooling Cable or Cathead		Automatic Trip Hammer	
	SPT (blows/foot)	Modified Split Barrel (blows/foot)	SPT (blows/foot)	Modified Split Barrel (blows/foot)
Very Soft	< 2	< 3	< 1	< 2
Soft	2 - 4	3 - 5	1 - 3	2 - 3
Firm	5 - 8	6 - 10	4 - 5	4 - 6
Stiff	9 - 15	11 - 20	6 - 10	7 - 13
Very Stiff	16 - 30	21 - 39	11 - 20	14 - 26
Hard	> 30	> 39	> 20	> 26

# BORING LOG EXPLANATION SHEET

DEPTH (feet)	Bulk Driven SAMPLES	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	
0							Bulk sample.
							Modified split-barrel drive sampler.
							No recovery with modified split-barrel drive sampler.
							Sample retained by others.
							Standard Penetration Test (SPT).
5							No recovery with a SPT.
		XX/XX					Shelby tube sample. Distance pushed in inches/length of sample recovered in inches.
							No recovery with Shelby tube sampler.
							Continuous Push Sample.
10							Seepage.
							Groundwater encountered during drilling.
							Groundwater measured after drilling.
						SM	MAJOR MATERIAL TYPE (SOIL):
							Solid line denotes unit change.
						CL	Dashed line denotes material change.
15							Attitudes: Strike/Dip b: Bedding c: Contact j: Joint f: Fracture F: Fault cs: Clay Seam s: Shear bss: Basal Slide Surface sf: Shear Fracture sz: Shear Zone sbs: Shear Bedding Surface
20							The total depth line is a solid line that is drawn at the bottom of the boring.

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>3/7/19</u> BORING NO. <u>B-1</u> GROUND ELEVATION <u>4,470' ± (MSL)</u> SHEET <u>1</u> OF <u>2</u> METHOD OF DRILLING <u>8" Hollow-Stem Auger (2R Drilling)</u> DRIVE WEIGHT <u>140 lbs. (Auto. Trip Hammer)</u> DROP <u>30"</u> SAMPLED BY <u>BAA</u> LOGGED BY <u>BAA</u> REVIEWED BY <u>MLP</u> <b>DESCRIPTION/INTERPRETATION</b>
	Bulk	Driven						
0							SC	ASPHALT CONCRETE: No base; approximately 2 inches thick. FILL: Brown to light brown, moist, loose, clayey SAND; few to little gravel.
7			7					
10			20	21.7	101.5		SM	RESIDUAL SOIL: Light brown to reddish yellow, moist, medium dense, silty SAND.
81/10"								
20			75					BEDROCK: Light brown, moist, very soft, GRANITIC ROCK; weathered; breaks down to poorly graded SAND to silty sand.
88/11"				5.8	108.0			
30			50/5"					@ 27': Decrease in weathering; fresh. @ 27.75': Groundwater encountered during drilling; wet. Reddish yellow to light pink; moderately hard to hard; friable; difficult drilling.
50/5"								
40								Total Depth = 36.0 feet. Groundwater was encountered at approximately 27.75 feet during drilling. Backfilled with cement-bentonite grout and patched with rapid-set concrete dyed black on 3/7/19.

**FIGURE A- 1**

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>3/7/19</u> BORING NO. <u>B-1</u> GROUND ELEVATION <u>4,470' ± (MSL)</u> SHEET <u>2</u> OF <u>2</u> METHOD OF DRILLING <u>8" Hollow-Stem Auger (2R Drilling)</u> DRIVE WEIGHT <u>140 lbs. (Auto. Trip Hammer)</u> DROP <u>30"</u> SAMPLED BY <u>BAA</u> LOGGED BY <u>BAA</u> REVIEWED BY <u>MLP</u>		
	Bulk	Driven						<b>DESCRIPTION/INTERPRETATION</b>		
40								<p><u>Notes:</u> Groundwater may rise to a level higher than that measured in borehole due to seasonal variations in precipitation and several other factors as discussed in the report.</p> <p>The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.</p>		
80										



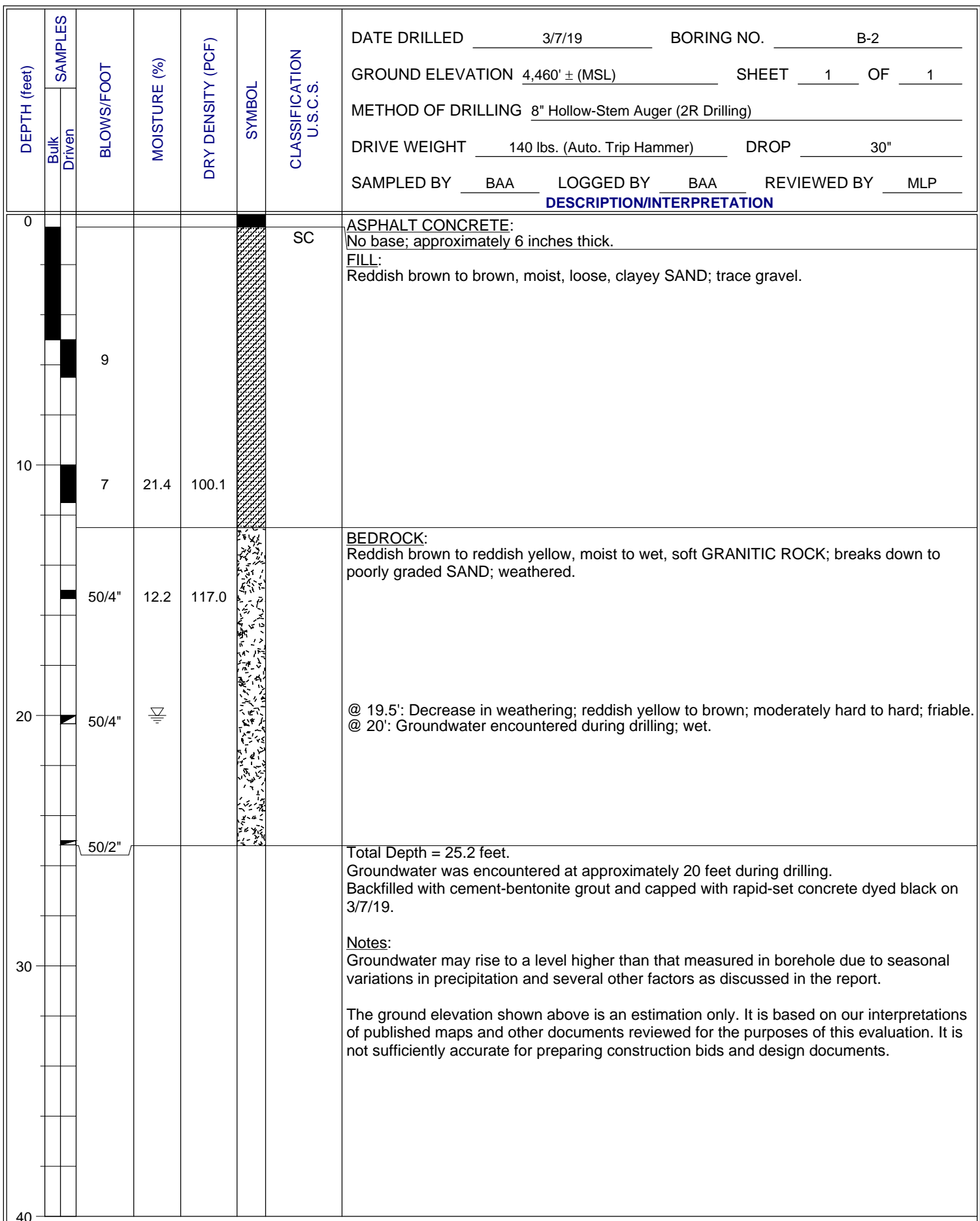
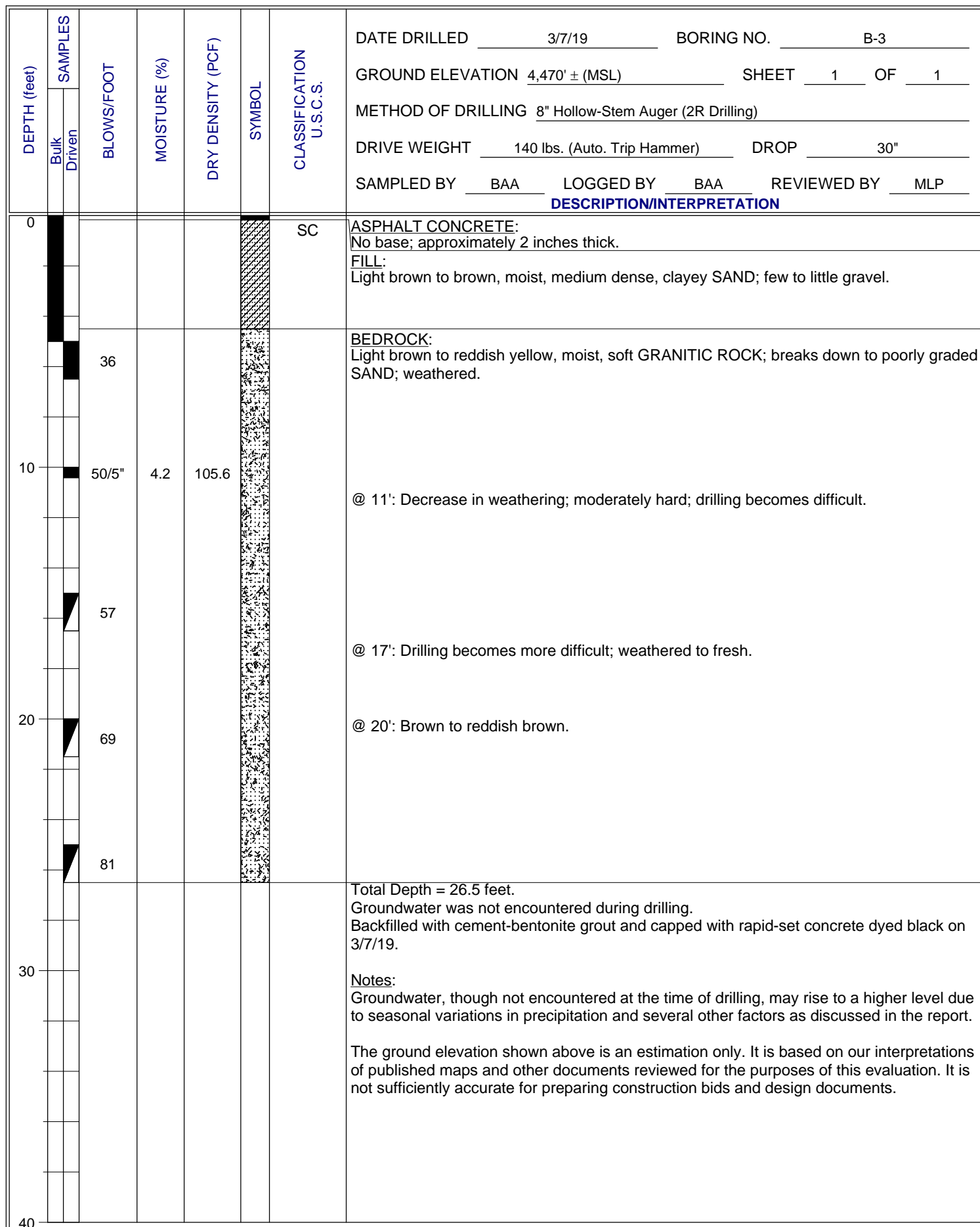


FIGURE A- 3



**FIGURE A- 4**

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>3/7/19</u> BORING NO. <u>B-4</u> GROUND ELEVATION <u>4,465' ± (MSL)</u> SHEET <u>1</u> OF <u>1</u> METHOD OF DRILLING <u>8" Hollow-Stem Auger (2R Drilling)</u> DRIVE WEIGHT <u>140 lbs. (Auto. Trip Hammer)</u> DROP <u>30"</u> SAMPLED BY <u>BAA</u> LOGGED BY <u>BAA</u> REVIEWED BY <u>MLP</u> <b>DESCRIPTION/INTERPRETATION</b>	
	Bulk	Driven							
0							SC	<b>ASPHALT CONCRETE:</b> No base; approximately 2 inches thick. <b>FILL:</b> Brown to light brown, moist, loose, clayey SAND; few gravel; few roots.  @ 7': Cobbles.	
10			10	21.8	101.3				
			14	10.1	88.7			<b>BEDROCK:</b> Light brown to yellowish brown, moist, soft to moderately hard GRANITIC ROCK; breaks down to poorly graded SAND with silt; few to little gravel.	
			84/11"	11.8	112.0				
20			91						
			95/3"					Total Depth = 26.5 feet. Groundwater was not encountered during drilling. Backfilled with cement-bentonite grout and capped with rapid-set concrete dyed black.  <b>Notes:</b> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.  The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.	
30									
40									

**FIGURE A- 5**



# APPENDIX B

## Laboratory Testing

# APPENDIX B

## LABORATORY TESTING

### **Classification**

Soils were visually and texturally classified in accordance with the Unified Soil Classification System (USCS) in general accordance with ASTM D 2488-00. Soil classifications are indicated on the logs of the exploratory borings in Appendix B.

### **In-Place Moisture and Density Tests**

The moisture content and dry density of relatively undisturbed samples obtained from the exploratory borings were evaluated in general accordance with ASTM D 2937-04. The test results are presented on the logs of the exploratory borings in Appendix B.

### **200 Wash**

An evaluation of the percentage of particles finer than the No. 200 sieve in selected soil samples was performed in general accordance with ASTM D 1140. The results of the tests are presented on Figure B-1.

### **Gradation Analysis**

A gradation analysis test was performed on a selected representative soil sample in general accordance with ASTM D 422. The grain-size distribution curve is shown on Figure B-2. These test results were utilized in evaluating the soil classifications in accordance with the USCS.

### **Direct Shear Tests**

Direct shear tests were performed on relatively undisturbed and remolded samples in general accordance with ASTM D 3080 to evaluate the shear strength characteristics of selected materials. The samples were inundated during shearing to represent adverse field conditions. The results are shown on Figures B-3, B-4, and B-5.

### **Soil Corrosivity Tests**

Soil pH, and minimum resistivity tests were performed on representative samples in general accordance with CT 643. The sulfate and chloride contents of the selected samples were evaluated in general accordance with CT 417 and 422, respectively. The test results are presented on Figure B-6.

### **Proctor Density Tests**

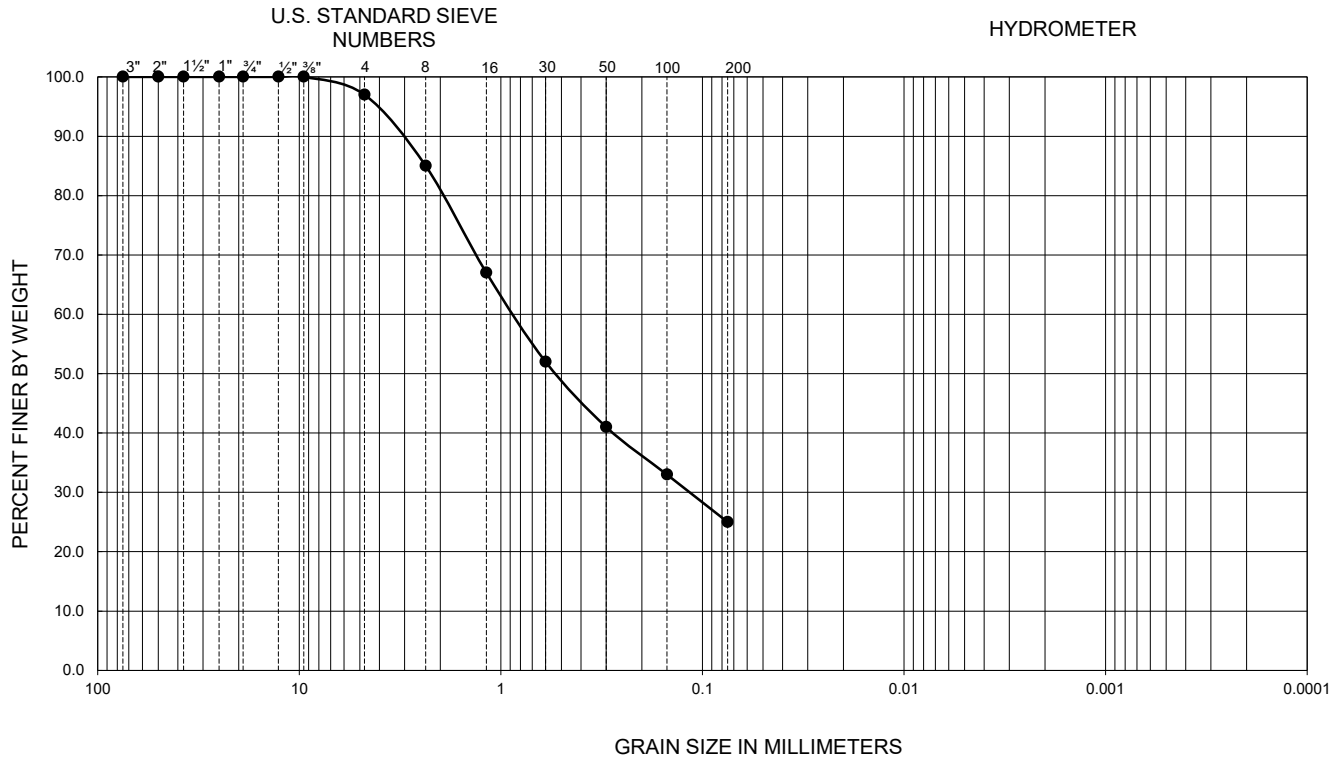
The maximum dry density and optimum moisture content of a selected representative soil sample was evaluated using the Modified Proctor method in general accordance with ASTM D 1557. The results of the test are summarized on Figure B-7.

SAMPLE LOCATION	SAMPLE DEPTH (ft)	DESCRIPTION	PERCENT PASSING NO. 4	PERCENT PASSING NO. 200	USCS (TOTAL SAMPLE)
B-1	5.0-6.5	CLAYEY SAND	93	27	SC
B-2	10.0-11.5	CLAYEY SAND	98	30	SC
B-3	0.0-5.0	CLAYEY SAND	90	25	SC
B-4	0.0-5.0	CLAYEY SAND	91	22	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 1140

FIGURE B-1

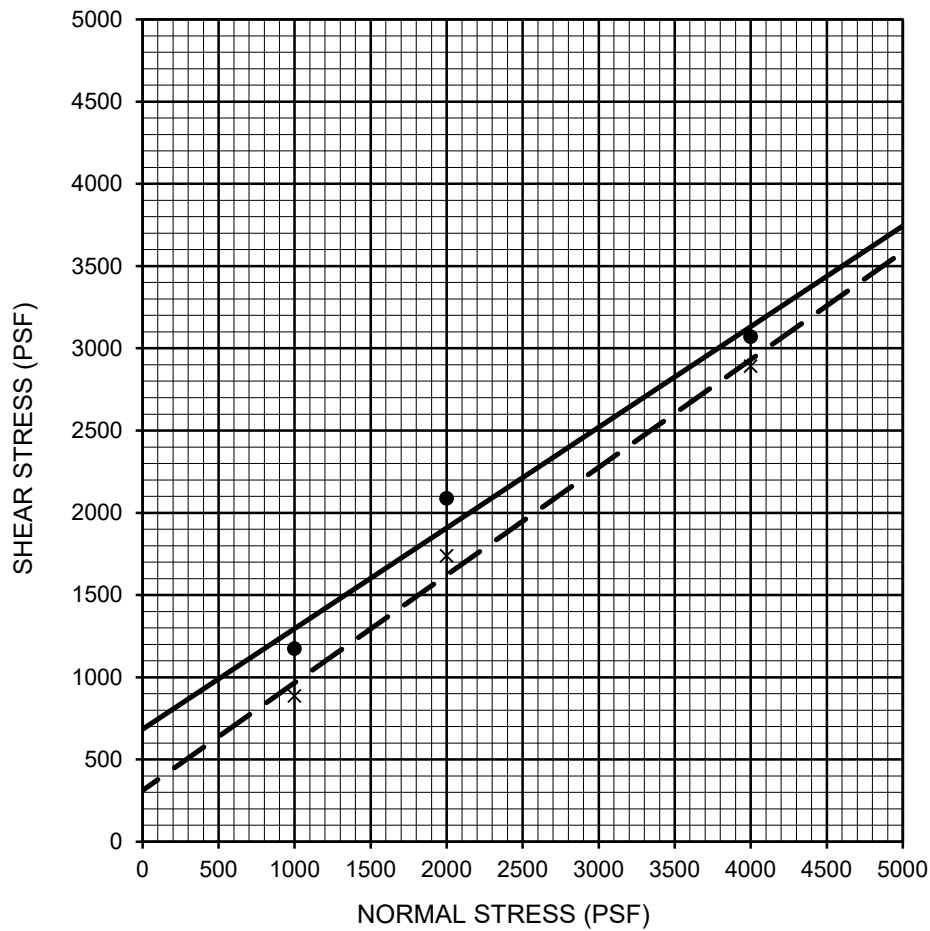
GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D <sub>10</sub>	D <sub>30</sub>	D <sub>60</sub>	C <sub>u</sub>	C <sub>c</sub>	Passing No. 200 (percent)	USCS
●	B-2	0.0-5.0	--	--	--	--	--	--	--	--	25	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

FIGURE B-2

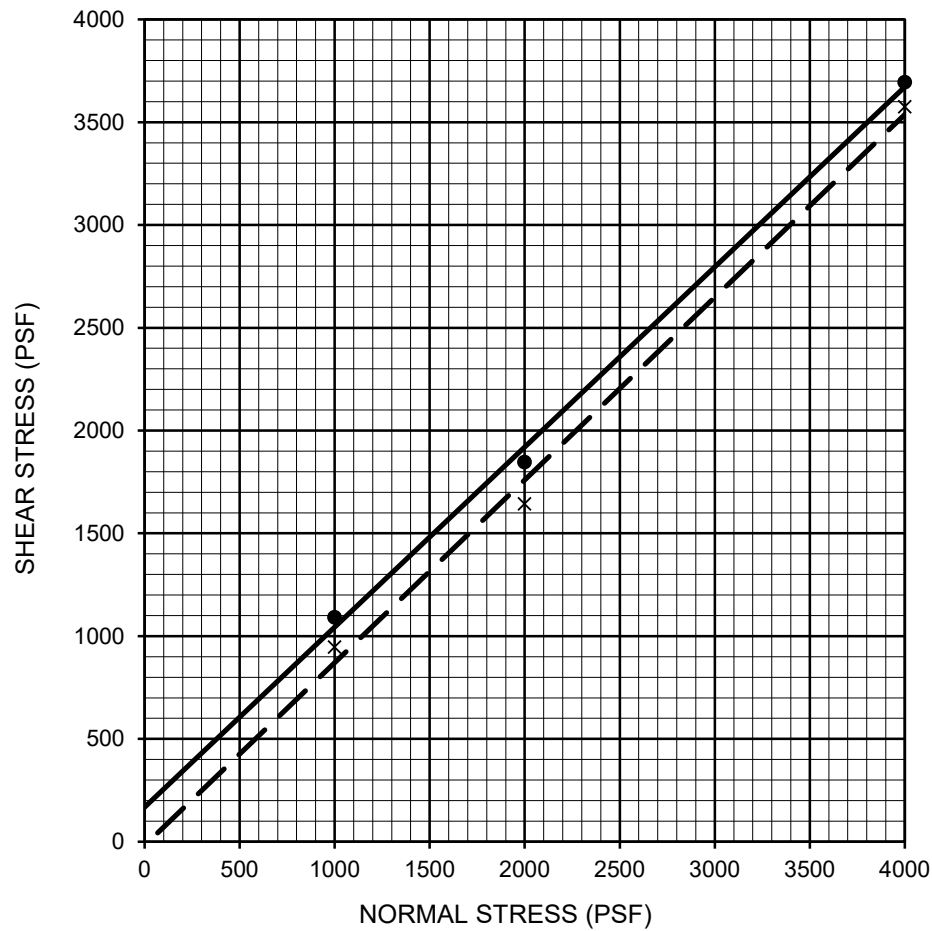


Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
CLAYEY SAND	—●—	B-1	0.0-5.0	Peak	684	31	SC
CLAYEY SAND	- - X - -	B-1	0.0-5.0	Ultimate	312	33	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080 ON A SAMPLE REMOLDED TO 90% RELATIVE COMPACTION

**FIGURE B-3**

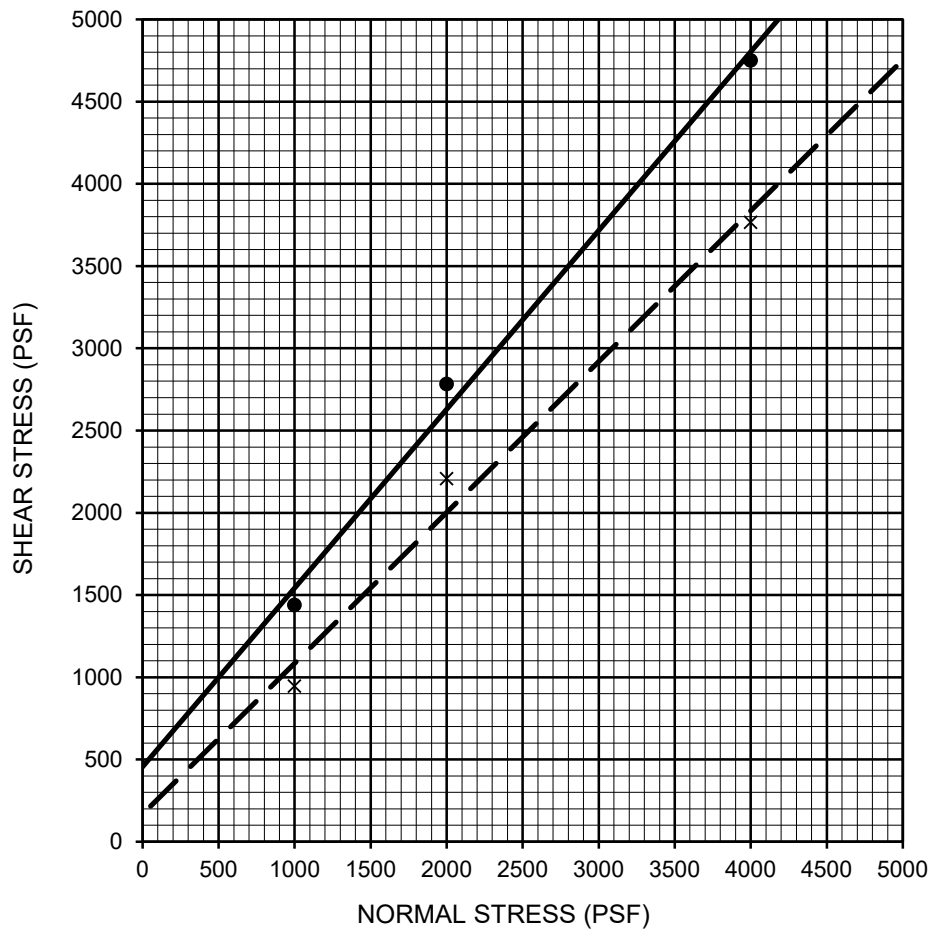




Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
CLAYEY SAND	—●—	B-2	10.0-11.5	Peak	168	41	SC
CLAYEY SAND	- - X - -	B-2	10.0-11.5	Ultimate	0	42	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

**FIGURE B-4**

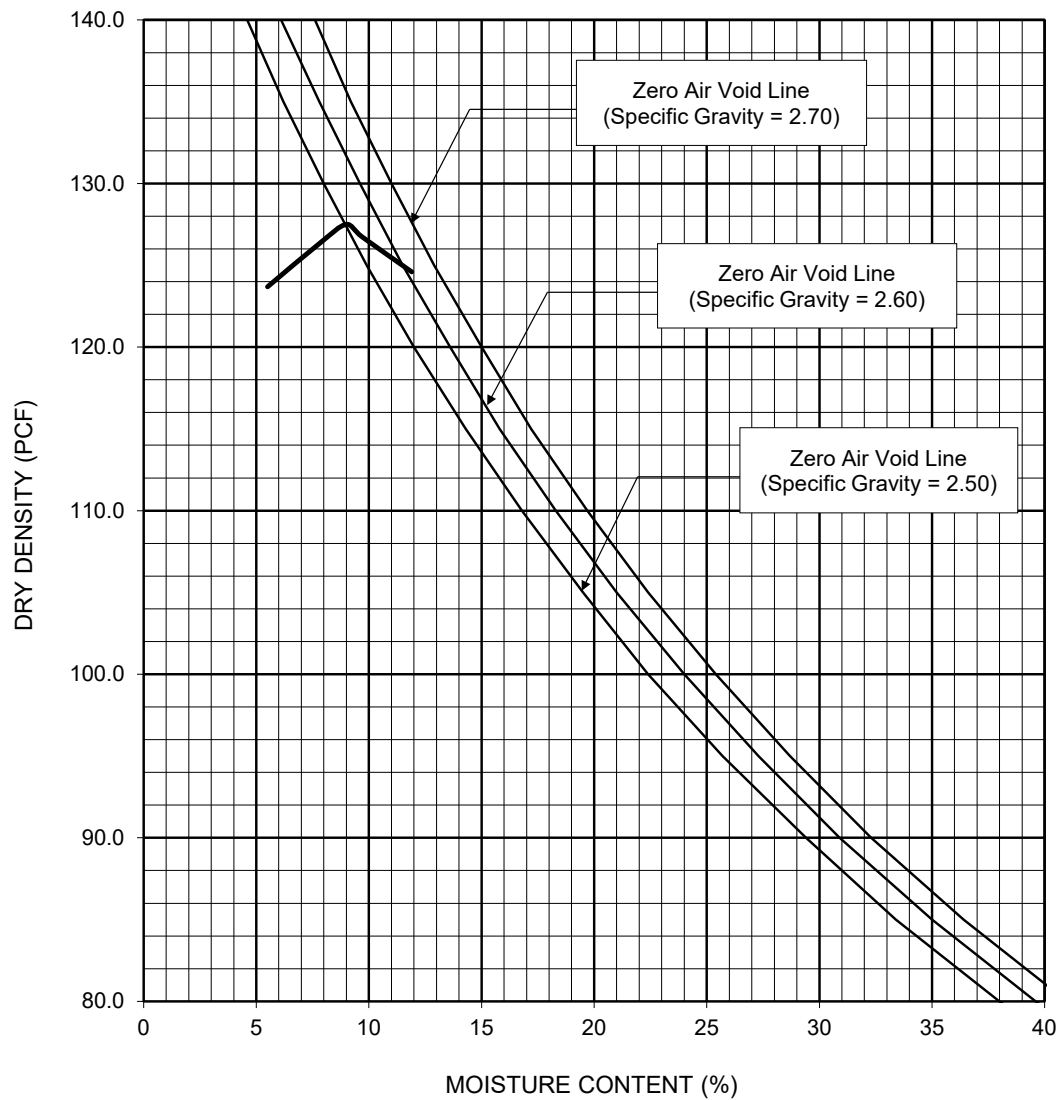


Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
POORLY GRADED SAND W/ SILT	—●—	B-4	10.0-11.5	Peak	456	47	SP-SM
POORLY GRADED SAND W/ SILT	- - X - -	B-4	10.0-11.5	Ultimate	168	43	SP-SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

**FIGURE B-5**





Sample Location	Depth (ft)	Soil Description	Maximum Dry Density (pcf)	Optimum Moisture Content (percent)
B-1	0.0-5.0	Light Brown Clayey Sand	127.5	9.0
Dry Density and Moisture Content Values Corrected for Oversize (ASTM D 4718)			N/A	N/A

PERFORMED IN GENERAL ACCORDANCE WITH ☒ ASTM D 1557 ☐ ASTM D 698 METHOD ☐ A ☒ B ☐ C

**FIGURE B-7**

**PROCTOR DENSITY TEST RESULTS**

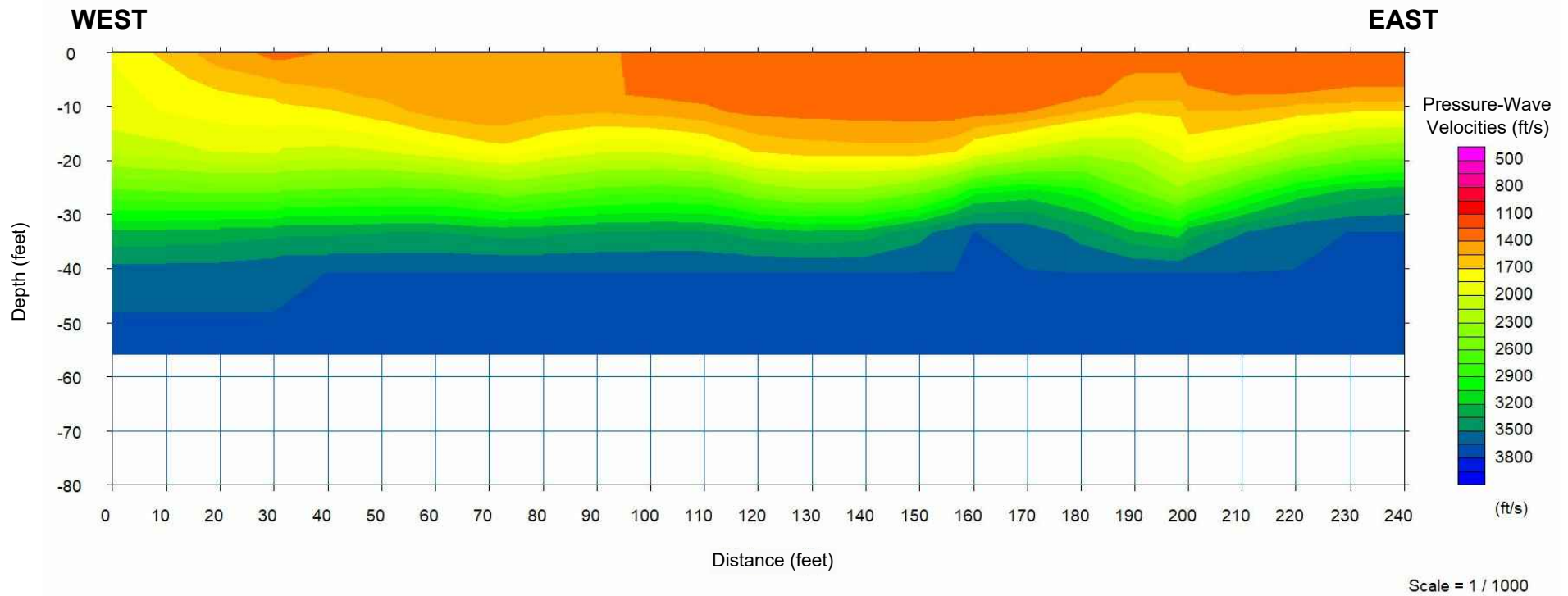
HOUSTON CREEK WASTE WATER TREATMENT PLANT  
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# APPENDIX C

## Geophysical Survey

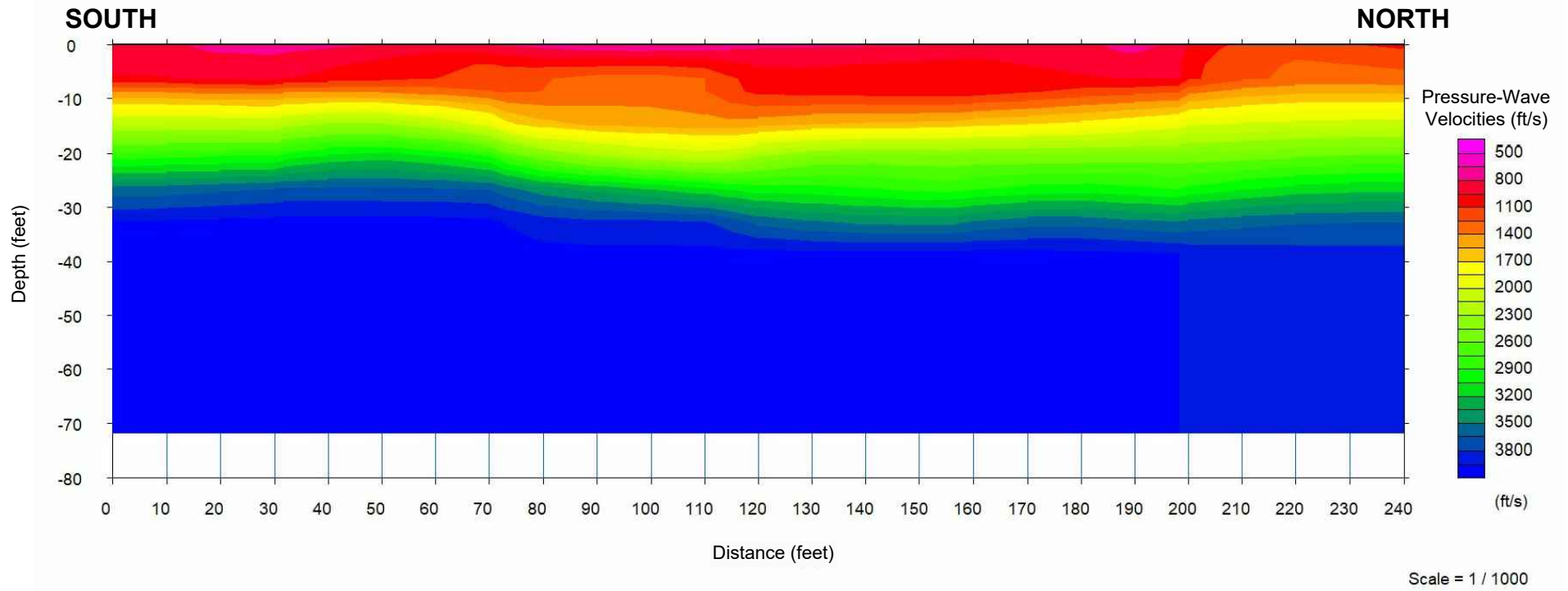


**FIGURE C-1**

**SEISMIC REFRACTION LINE 1**

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**FIGURE C-2**

**SEISMIC REFRACTION LINE 2**

HOUSTON CREEK WASTE WATER TREATMENT PLANT  
CRESTLINE, CALIFORNIA



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## **Appendix F**

### **Greenhouse Gas Analysis**

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**Crestline Sanitation Huston Creek  
Wastewater Treatment Plant  
(WWTP) Dewatering Building and  
Primary Clarifier Project  
GREENHOUSE GAS ANALYSIS  
COUNTY OF SAN BERNARDINO**

PREPARED BY:

Haseeb Qureshi  
hqureshi@urbanxroads.com  
(949) 336-5987

Alyssa Tamase  
atamase@urbanxroads.com  
(949)336-5988

SEPTEMBER 19, 2019



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## **LIST OF ABBREVIATED TERMS**

(1)	Reference
CAA	Federal Clean Air Act
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resource Board
CBSC	California Building Standards Commission
CEC	California Energy Commission
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFC	Chlorofluorocarbons
CFR	Code of Federal Regulations
CH <sub>4</sub>	Methane
CO	Carbon Monoxide
CO <sub>2</sub>	Carbon Dioxide
CO <sub>2</sub> e	Carbon Dioxide Equivalent
CPUC	California Public Utilities Commission
DRP	Development Review Process
EPA	Environmental Protection Agency
GCC	Global Climate Change
GHGA	Greenhouse Gas Analysis
GHG Plan	Greenhouse Gas Plan
GWP	Global Warming Potential
HFC	Hydrofluorocarbons
LCA	Life-Cycle Analysis
MMs	Mitigation Measures
MMTCO <sub>2</sub> e	Million Metric Ton of Carbon Dioxide Equivalent
MTCO <sub>2</sub> e	Metric Ton of Carbon Dioxide Equivalent
N <sub>2</sub> O	Nitrogen Dioxide
NIOSH	National Institute for Occupational Safety and Health
NO <sub>x</sub>	Oxides of Nitrogen
PFC	Perfluorocarbons
PM <sub>10</sub>	Particulate Matter 10 microns in diameter or less
PM <sub>2.5</sub>	Particulate Matter 2.5 microns in diameter or less
PPM	Parts Per Million
Project	Crestline Sanitation Huston Creek Wastewater Treatment

Plant (WWTP) Dewatering Building and Primary Clarifier Project

SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
UNFCCC	United Nations' Framework Convention on Climate Change
VOC	Volatile Organic Compounds
WWTP	Wastewater Treatment Plant



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## EXECUTIVE SUMMARY

### ES.1 SUMMARY OF FINDINGS

The results of this *Crestline Sanitation Huston Creek Wastewater Treatment Plant (WWTP) Dewatering Building and Primary Clarifier Project Greenhouse Gas Analysis* is summarized below based on the significance criteria in Section 3 of this report consistent with Appendix G of the California Environmental Quality Act (CEQA) Guidelines (1). Table ES-1 shows the findings of significance for potential greenhouse gas (GHG) impacts under CEQA.

**TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS**

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
GHG Impact #1: The Project would not generate direct or indirect GHG emission that would result in a significant impact on the environment.	3.8	<i>Less Than Significant</i>	<i>n/a</i>
GHG Impact #2: The Project would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.	3.8	<i>Less Than Significant</i>	<i>n/a</i>

### ES.2 PROJECT REQUIREMENTS

The Project would be required to comply with regulations imposed by the State of California and the South Coast Air Quality Management District (SCAQMD) aimed at the reduction of air pollutant emissions. Those that are directly and indirectly applicable to the Project and that would assist in the reduction of GHG emissions include:

- Global Warming Solutions Act of 2006 (AB32) (2).
- Regional GHG Emissions Reduction Targets (2)/Sustainable Communities Strategies (SB 375) (3).
- Pavley Fuel Efficiency Standards (AB1493). Establishes fuel efficiency ratings for new vehicles (4).
- Title 24 California Code of Regulations (California Building Code). Establishes energy efficiency requirements for new construction (5).
- Title 20 California Code of Regulations (Appliance Energy Efficiency Standards). Establishes energy efficiency requirements for appliances (6).
- Title 17 California Code of Regulations (Low Carbon Fuel Standard). Requires carbon content of fuel sold in California to be 10% less by 2020 (7).
- California Water Conservation in Landscaping Act of 2006 (AB1881). Requires local agencies to adopt the Department of Water Resources updated Water Efficient Landscape Ordinance or equivalent by January 1, 2010 to ensure efficient landscapes in new development and reduced water waste in existing landscapes (8).

- Statewide Retail Provider Emissions Performance Standards (SB 1368). Requires energy generators to achieve performance standards for GHG emissions (9).
- Renewable Portfolio Standards (SB 1078). Requires electric corporations to increase the amount of energy obtained from eligible renewable energy resources to 20 percent by 2010 and 33 percent by 2020 (10).
- Senate Bill 32 (SB 32). Requires the state to reduce statewide GHG emissions to 40% below 1990 levels by 2030, a reduction target that was first introduced in Executive Order B-30-15 (11).

Promulgated regulations that will affect the Project's emissions are accounted for in the Project's GHG calculations provided in this report. In particular, the Pavley Standards, Low Carbon Fuel Standards, and Renewable Portfolio Standards (RPS) will be in effect for the AB 32 target year of 2020, and therefore are accounted for in the Project's emission calculations.

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# **1 INTRODUCTION**

This report presents the results of the greenhouse gas analysis (GHGA) prepared by Urban Crossroads, Inc., for the proposed Crestline Sanitation Huston Creek Wastewater Treatment Plant (WWTP) Dewatering Building and Primary Clarifier Project (referred to as “Project”). The purpose of this GHGA is to evaluate Project-related construction and operational emissions and determine the level of GHG impacts as a result of constructing and operating the proposed Project.

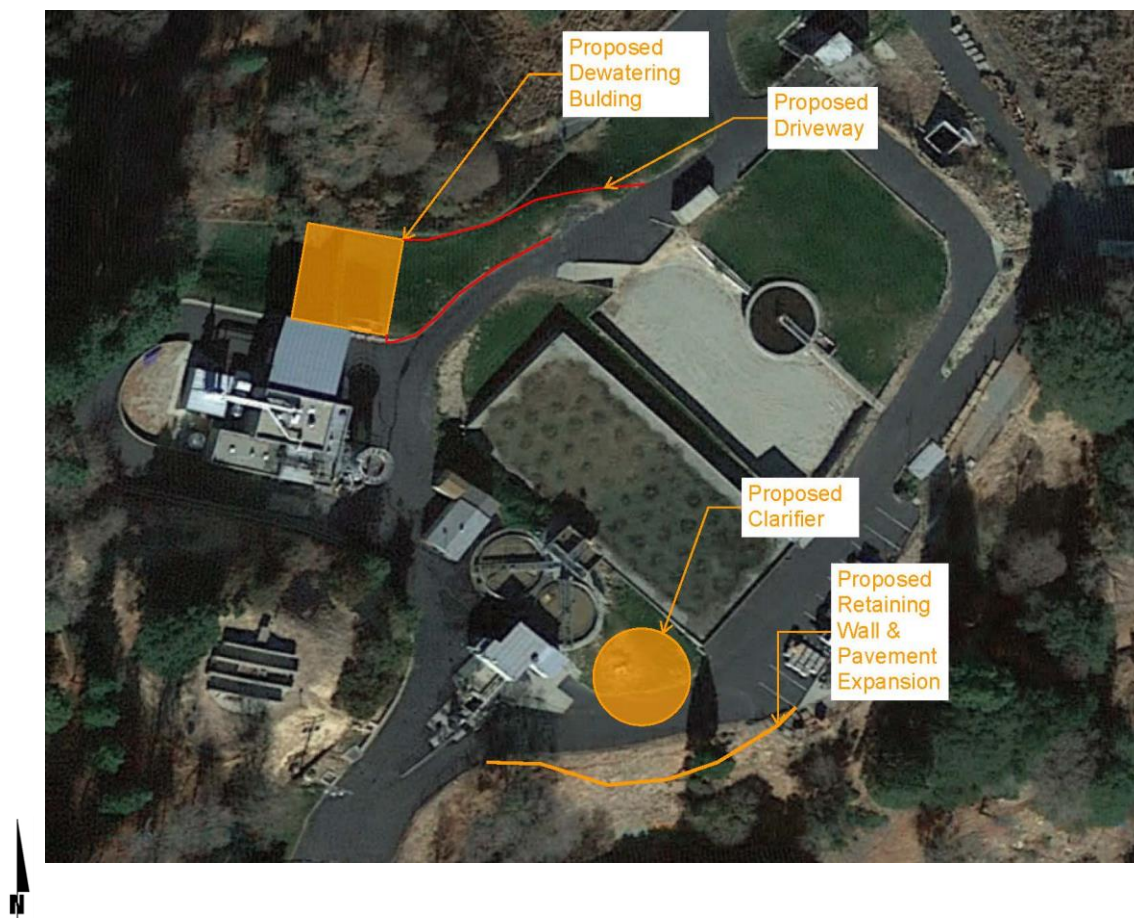
## **1.1 SITE LOCATION**

The proposed Crestline Sanitation Huston Creek Wastewater Treatment Plant (WWTP) Dewatering Building and Primary Clarifier Project is located within the census-designated community of Crestline, in the County of San Bernardino.

## **1.2 PROJECT DESCRIPTION**

The Project proposes to upgrade the existing wastewater treatment plant with the addition of a primary clarifier, backup generator, trickling filter recirculation pumps, and a sludge dewatering building, as shown on Exhibit 1-A. The Project is anticipated to be constructed in a single phase by the year 2022.

### **EXHIBIT 1-A: PROJECT CONCEPT SKETCH**



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## **2 CLIMATE CHANGE SETTING**

### **2.1 INTRODUCTION TO GLOBAL CLIMATE CHANGE**

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

An individual project like the proposed Project evaluated in this GHGA cannot generate enough GHG emissions to affect a discernible change in global climate. However, the proposed Project may participate in the potential for GCC by its incremental contribution of GHGs combined with the cumulative increase of all other sources of GHGs, which when taken together constitute potential influences on GCC. Because these changes may have serious environmental consequences, Section 3.0 will evaluate the potential for the proposed Project to have a significant effect upon the environment as a result of its potential contribution to the greenhouse effect.

### **2.2 GLOBAL CLIMATE CHANGE DEFINED**

GCC refers to the change in average meteorological conditions on the earth with respect to temperature, wind patterns, precipitation and storms. Global temperatures are regulated by naturally occurring atmospheric gases such as water vapor, CO<sub>2</sub> (carbon dioxide), N<sub>2</sub>O (nitrous oxide), CH<sub>4</sub> (methane), hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride. These particular gases are important due to their residence time (duration they stay) in the atmosphere, which ranges from 10 years to more than 100 years. These gases allow solar radiation into the earth's atmosphere, but prevent radioactive heat from escaping, thus warming the earth's atmosphere. GCC can occur naturally as it has in the past with the previous ice ages.

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

### **2.3 GREENHOUSE GASES**

#### **GREENHOUSE GASES AND HEALTH EFFECTS**

GHGs trap heat in the atmosphere, creating a GHG effect that results in global warming and climate change. Many gases demonstrate these properties and as discussed in Table 2-1. For the purposes of this analysis, emissions of CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O were evaluated (see Table 3-1 later in



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

**TABLE 2-1: GREENHOUSE GASES**

Greenhouse Gases	Description	Sources	Health Effects
Water Vapor (H <sub>2</sub> O)	<p>H<sub>2</sub>O is the most abundant, important, and variable GHG in the atmosphere. Water vapor is not considered a pollutant; in the atmosphere it maintains a climate necessary for life. Changes in its concentration are primarily considered to be a result of climate feedbacks related to the warming of the atmosphere rather than a direct result of industrialization. A climate feedback is an indirect, or secondary, change, either positive or negative, that occurs within the climate system in response to a forcing mechanism. The feedback loop in which water is involved is critically important to projecting future climate change.</p> <p>As the temperature of the atmosphere rises, more water is evaporated from ground storage (rivers, oceans, reservoirs, soil). Because the air is warmer, the relative humidity can be higher (in essence, the air is able to 'hold' more water when it is warmer), leading to more water vapor in the atmosphere. As a GHG, the higher concentration of water vapor is then able to absorb more thermal indirect energy radiated from the Earth, thus further warming the atmosphere. The warmer atmosphere can then hold more water vapor and so on and so on. This is referred to as a "positive feedback loop." The extent to which this positive</p>	<p>The main source of water vapor is evaporation from the oceans (approximately 85 percent). Other sources include evaporation from other water bodies, sublimation (change from solid to gas) from sea ice and snow, and transpiration from plant leaves.</p>	<p>There are no known direct health effects related to water vapor at this time. It should be noted however that when some pollutants react with water vapor, the reaction forms a transport mechanism for some of these pollutants to enter the human body through water vapor.</p>

Greenhouse Gases	Description	Sources	Health Effects
	feedback loop will continue is unknown as there are also dynamics that hold the positive feedback loop in check. As an example, when water vapor increases in the atmosphere, more of it will eventually condense into clouds, which are more able to reflect incoming solar radiation (thus allowing less energy to reach the earth's surface and heat it up) (12).		
Carbon Dioxide (CO <sub>2</sub> )	CO <sub>2</sub> is an odorless and colorless GHG. Since the industrial revolution began in the mid-1700s, the sort of human activity that increases GHG emissions has increased dramatically in scale and distribution. Data from the past 50 years suggests a corollary increase in levels and concentrations. As an example, prior to the industrial revolution, CO <sub>2</sub> concentrations were fairly stable at 280 parts per million (ppm). Today, they are around 370 ppm, an increase of more than 30 percent. Left unchecked, the concentration of carbon dioxide in the atmosphere is projected to increase to a minimum of 540 ppm by 2100 as a direct result of anthropogenic sources (13).	Carbon dioxide is emitted from natural and manmade sources. Natural sources include: the decomposition of dead organic matter; respiration of bacteria, plants, animals and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources include: the burning of coal, oil, natural gas, and wood. Carbon dioxide is naturally removed from the air by photosynthesis, dissolution into ocean water, transfer to soils and ice caps, and chemical weathering of carbonate rocks (14).	Outdoor levels of carbon dioxide are not high enough to result in negative health effects.  According to the National Institute for Occupational Safety and Health (NIOSH) high concentrations of carbon dioxide can result in health effects such as: headaches, dizziness, restlessness, difficulty breathing, sweating, increased heart rate, increased cardiac output, increased blood pressure, coma, asphyxia, and/or convulsions. It should be noted that current concentrations of carbon dioxide in the earth's atmosphere are estimated to be approximately 370 ppm, the actual reference exposure level (level at which adverse health effects typically occur) is at exposure levels of 5,000 ppm averaged over 10 hours in a 40-hour workweek and short-term reference exposure levels of 30,000

Greenhouse Gases	Description	Sources	Health Effects
			ppm averaged over a 15 minute period (15).
Methane (CH <sub>4</sub> )	CH <sub>4</sub> is an extremely effective absorber of radiation, although its atmospheric concentration is less than carbon dioxide and its lifetime in the atmosphere is brief (10-12 years), compared to other GHGs.	Methane has both natural and anthropogenic sources. It is released as part of the biological processes in low oxygen environments, such as in swamplands or in rice production (at the roots of the plants). Over the last 50 years, human activities such as growing rice, raising cattle, using natural gas, and mining coal have added to the atmospheric concentration of methane. Other anthropogenic sources include fossil-fuel combustion and biomass burning (16).	Methane is extremely reactive with oxidizers, halogens, and other halogen-containing compounds. Exposure to high levels of methane can cause asphyxiation, loss of consciousness, headache and dizziness, nausea and vomiting, weakness, loss of coordination, and an increased breathing rate.
Nitrous Oxide (N <sub>2</sub> O)	N <sub>2</sub> O, also known as laughing gas, is a colorless GHG. Concentrations of nitrous oxide also began to rise at the beginning of the industrial revolution. In 1998, the global concentration was 314 parts per billion (ppb).	Nitrous oxide is produced by microbial processes in soil and water, including those reactions which occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions)	Nitrous oxide can cause dizziness, euphoria, and sometimes slight hallucinations. In small doses, it is considered harmless. However, in some cases, heavy and extended use can cause Olney's Lesions (brain damage) (17).

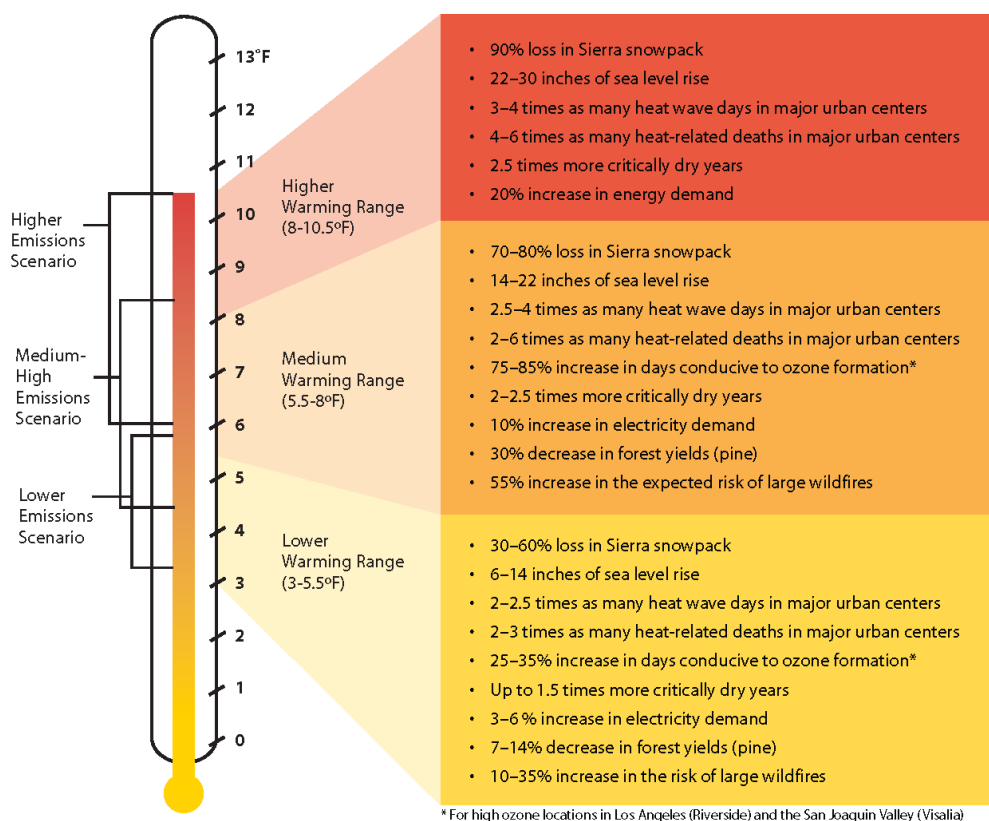
Greenhouse Gases	Description	Sources	Health Effects
		also contribute to its atmospheric load. It is used as an aerosol spray propellant, i.e., in whipped cream bottles. It is also used in potato chip bags to keep chips fresh. It is used in rocket engines and in race cars. Nitrous oxide can be transported into the stratosphere, be deposited on the earth's surface, and be converted to other compounds by chemical reaction (17).	
Chlorofluorocarbons (CFCs)	CFCs are gases formed synthetically by replacing all hydrogen atoms in methane or ethane (C <sub>2</sub> H <sub>6</sub> ) with chlorine and/or fluorine atoms. CFCs are nontoxic, nonflammable, insoluble and chemically unreactive in the troposphere (the level of air at the earth's surface).	CFCs have no natural source but were first synthesized in 1928. They were used for refrigerants, aerosol propellants and cleaning solvents. Due to the discovery that they are able to destroy stratospheric ozone, a global effort to halt their production was undertaken and was extremely successful, so much so that levels of the major CFCs are now remaining steady or declining. However, their long atmospheric lifetimes mean that some of the CFCs will remain in the atmosphere for over 100 years (18).	In confined indoor locations, working with CFC-113 or other CFCs is thought to result in death by cardiac arrhythmia (heart frequency too high or too low) or asphyxiation.

Greenhouse Gases	Description	Sources	Health Effects
Hydrofluorocarbons (HFCs)	HFCs are synthetic, man-made chemicals that are used as a substitute for CFCs. Out of all the GHGs, they are one of three groups with the highest global warming potential (GWP). The HFCs with the largest measured atmospheric abundances are (in order), HFC-23 (CHF <sub>3</sub> ), HFC-134a (CH <sub>2</sub> FCF), and HFC-152a (CH <sub>3</sub> CF <sub>2</sub> ). Prior to 1990, the only significant emissions were of HFC-23. HFC-134a emissions are increasing due to its use as a refrigerant.	HFCs are manmade for applications such as automobile air conditioners and refrigerants.	No health effects are known to result from exposure to HFCs.
Perfluorocarbons (PFCs)	PFCs have stable molecular structures and do not break down through chemical processes in the lower atmosphere. High-energy ultraviolet rays, which occur about 60 kilometers above earth's surface, are able to destroy the compounds. Because of this, PFCs have very long lifetimes, between 10,000 and 50,000 years. Two common PFCs are tetrafluoromethane (CF <sub>4</sub> ) and hexafluoroethane (C <sub>2</sub> F <sub>6</sub> ). The EPA estimates that concentrations of CF <sub>4</sub> in the atmosphere are over 70 parts per trillion (ppt).	The two main sources of PFCs are primary aluminum production and semiconductor manufacture.	No health effects are known to result from exposure to PFCs.
Sulfur Hexafluoride (SF <sub>6</sub> )	Sulfur hexafluoride (SF <sub>6</sub> ) is an inorganic, odorless, colorless, nontoxic, nonflammable gas. It also has the highest GWP of any gas evaluated (23,900) (19). The EPA indicates that concentrations in the 1990s were about 4 ppt.	Sulfur hexafluoride is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.	In high concentrations in confined areas, the gas presents the hazard of suffocation because it displaces the oxygen needed for breathing.

Greenhouse Gases	Description	Sources	Health Effects
Nitrogen Trifluoride (NF <sub>3</sub> )	NF <sub>3</sub> is a colorless gas with a distinctly moldy odor. The World Resources Institute (WRI) indicates that NF <sub>3</sub> has a 100-year GWP of 17,200 (20).	NF <sub>3</sub> is used in industrial processes and is produced in the manufacturing of semiconductors, LCD (Liquid Crystal Display) panels, types of solar panels, and chemical lasers.	Long-term or repeated exposure may affect the liver and kidneys and may cause fluorosis (21).

The potential health effects related directly to the emissions of CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O as they relate to development projects such as the proposed Project are still being debated in the scientific community. Their cumulative effects to GCC have the potential to cause adverse effects to human health. Increases in Earth's ambient temperatures would result in more intense heat waves, causing more heat-related deaths. Scientists also purport that higher ambient temperatures would increase disease survival rates and result in more widespread disease. Climate change will likely cause shifts in weather patterns, potentially resulting in devastating droughts and food shortages in some areas (22). Exhibit 2-A presents the potential impacts of global warming (23).

#### EXHIBIT 2-A: SUMMARY OF PROJECTED GLOBAL WARMING IMPACT, 2070-2099 (AS COMPARED WITH 1961-1990)



Source: Barbara H. Allen-Diaz. "Climate change affects us all." *University of California, Agriculture and Natural Resources*, 2009.

## 2.4 GLOBAL WARMING POTENTIAL

GHGs have varying GWP values. GWP of a GHG indicates the amount of warming a gas causes over a given period of time and represents the potential of a gas to trap heat in the atmosphere. Carbon dioxide is utilized as the reference gas for GWP, and thus has a GWP of 1. Carbon dioxide equivalent (CO<sub>2</sub>e) is a term used for describing the difference GHGs in a common unit. CO<sub>2</sub>e signifies the amount of CO<sub>2</sub> which would have the equivalent GWP.

The atmospheric lifetime and GWP of selected GHGs are summarized at Table 2-2. As shown in the table below, GWP for the Second Assessment Report, the Intergovernmental Panel on Climate Change (IPCC)'s scientific and socio-economic assessment on climate change, range from 1 for carbon dioxide to 23,900 for sulfur hexafluoride and GWP for the IPCC's 5<sup>th</sup> Assessment Report range from 1 for CO<sub>2</sub> to 23,500 for SF<sub>6</sub> (24).

**TABLE 2-2: GLOBAL WARMING POTENTIAL AND ATMOSPHERIC LIFETIME OF SELECT GHGS**

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100-year time horizon)	
		Second Assessment Report	5 <sup>th</sup> Assessment Report
CO <sub>2</sub>	See*	1	1
CH <sub>4</sub>	12 .4	21	28
N <sub>2</sub> O	121	310	265
HFC-23	222	11,700	12,400
HFC-134a	13.4	1,300	1,300
HFC-152a	1.5	140	138
SF <sub>6</sub>	3,200	23,900	23,500

\*As per Appendix 8.A. of IPCC's 5th Assessment Report, no single lifetime can be given.

Source: Table 2.14 of the IPCC Fourth Assessment Report, 2007

## 2.5 GREENHOUSE GAS EMISSIONS INVENTORIES

### *Global*

Worldwide anthropogenic (human) GHG emissions are tracked by the IPCC for industrialized nations (referred to as Annex I) and developing nations (referred to as Non-Annex I). Human GHG emissions data for Annex I nations are available through 2017. Based on the latest available data, the sum of these emissions totaled approximately 29,216,501 Gg CO<sub>2</sub>e<sup>1</sup> (25) (26) as summarized on Table 2-3.

<sup>1</sup> The global emissions are the sum of Annex I and non-Annex I countries, without counting Land-Use, Land-Use Change and Forestry (LULUCF). For countries without 2017 data, the UNFCCC data for the most recent year were used. United Nations Framework Convention on Climate Change, "Annex I Parties – GHG total without LULUCF," The most recent GHG emissions for China and India are from 2014.

## United States

As noted in Table 2-3, the United States, as a single country, was the number two producer of GHG emissions in 2017.

**TABLE 2-3: TOP GHG PRODUCING COUNTRIES AND THE EUROPEAN UNION <sup>2</sup>**

<b>Emitting Countries</b>	<b>GHG Emissions (Gg CO<sub>2</sub>e)</b>
China	11,911,710
United States	6,456,718
European Union (28-member countries)	4,323,163
India	3,079,810
Russian Federation	2,155,470
Japan	1,289,630
<b>Total</b>	<b>29,216,501</b>

Note: Gg – gigagram

## State of California

California has significantly slowed the rate of growth of GHG emissions due to the implementation of energy efficiency programs as well as adoption of strict emission controls, but is still a substantial contributor to the U.S. emissions inventory total (27). The California Air Resource Board (CARB) compiles GHG inventories for the State of California. Based upon the 2018 GHG inventory data (i.e., the latest year for which data are available) for the 2000-2016 GHG emissions period, California emitted an average 429.4 million metric tons of CO<sub>2</sub>e (MMTCO<sub>2</sub>e) per year including emissions resulting from imported electrical power in 2015 (28).

## 2.6 EFFECTS OF CLIMATE CHANGE IN CALIFORNIA

### Public Health

Higher temperatures may increase the frequency, duration, and intensity of conditions conducive to air pollution formation. For example, days with weather conducive to ozone formation could increase from 25 to 35 percent under the lower warming range to 75 to 85 percent under the medium warming range. In addition, if global background ozone levels increase as predicted in some scenarios, it may become impossible to meet local air quality standards. Air quality could be further compromised by increases in wildfires, which emit fine particulate matter that can travel long distances, depending on wind conditions. The Climate Scenarios report indicates that large wildfires could become up to 55 percent more frequent if GHG emissions are not significantly reduced.

In addition, under the higher warming range scenario, there could be up to 100 more days per year with temperatures above 90°F in Los Angeles and 95°F in Sacramento by 2100. This is a large

<sup>2</sup> Used <http://unfccc.int> data for Annex I countries. Consulted the CAIT Climate Data Explorer in <https://www.climatewatchdata.org> site to reference Non-Annex I countries of China and India.



increase over historical patterns and approximately twice the increase projected if temperatures remain within or below the lower warming range. Rising temperatures could increase the risk of death from dehydration, heat stroke/exhaustion, heart attack, stroke, and respiratory distress caused by extreme heat.

### *Water Resources*

A vast network of man-made reservoirs and aqueducts captures and transports water throughout the state from northern California rivers and the Colorado River. The current distribution system relies on Sierra Nevada snowpack to supply water during the dry spring and summer months. Rising temperatures, potentially compounded by decreases in precipitation, could severely reduce spring snowpack, increasing the risk of summer water shortages.

If temperatures continue to increase, more precipitation could fall as rain instead of snow, and the snow that does fall could melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent. Under the lower warming range scenario, snowpack losses could be only half as large as those possible if temperatures were to rise to the higher warming range. How much snowpack could be lost depends in part on future precipitation patterns, the projections for which remain uncertain. However, even under the wetter climate projections, the loss of snowpack could pose challenges to water managers and hamper hydropower generation. It could also adversely affect winter tourism. Under the lower warming range, the ski season at lower elevations could be reduced by as much as a month. If temperatures reach the higher warming range and precipitation declines, there might be many years with insufficient snow for skiing and snowboarding.

The State's water supplies are also at risk from rising sea levels. An influx of saltwater could degrade California's estuaries, wetlands, and groundwater aquifers. Saltwater intrusion caused by rising sea levels is a major threat to the quality and reliability of water within the southern edge of the Sacramento/San Joaquin River Delta – a major fresh water supply.

### *Agriculture*

Increased temperatures could cause widespread changes to the agriculture industry reducing the quantity and quality of agricultural products statewide. First, California farmers could possibly lose as much as 25 percent of the water supply needed. Although higher CO<sub>2</sub> levels can stimulate plant production and increase plant water-use efficiency, California's farmers could face greater water demand for crops and a less reliable water supply as temperatures rise. Crop growth and development could change, as could the intensity and frequency of pest and disease outbreaks. Rising temperatures could aggravate ozone pollution, which makes plants more susceptible to disease and pests and interferes with plant growth.

Plant growth tends to be slow at low temperatures, increasing with rising temperatures up to a threshold. However, faster growth can result in less-than-optimal development for many crops, so rising temperatures could worsen the quantity and quality of yield for a number of California's agricultural products. Products likely to be most affected include wine grapes, fruits and nuts.

In addition, continued GCC could shift the ranges of existing invasive plants and weeds and alter competition patterns with native plants. Range expansion could occur in many species while range contractions may be less likely in rapidly evolving species with significant populations already established. Should range contractions occur, new or different weed species could fill the emerging gaps. Continued GCC could alter the abundance and types of many pests, lengthen pests' breeding season, and increase pathogen growth rates.

#### *Forests and Landscapes*

GCC has the potential to intensify the current threat to forests and landscapes by increasing the risk of wildfire and altering the distribution and character of natural vegetation. If temperatures rise into the medium warming range, the risk of large wildfires in California could increase by as much as 55 percent, which is almost twice the increase expected if temperatures stay in the lower warming range. However, since wildfire risk is determined by a combination of factors, including precipitation, winds, temperature, and landscape and vegetation conditions, future risks will not be uniform throughout the state. In contrast, wildfires in northern California could increase by up to 90 percent due to decreased precipitation.

Moreover, continued GCC has the potential to alter natural ecosystems and biological diversity within the state. For example, alpine and subalpine ecosystems could decline by as much as 60 to 80 percent by the end of the century as a result of increasing temperatures. The productivity of the state's forests has the potential to decrease as a result of GCC.

#### *Rising Sea Levels*

Rising sea levels, more intense coastal storms, and warmer water temperatures could increasingly threaten the state's coastal regions. Under the higher warming range scenario, sea level is anticipated to rise 22 to 35 inches by 2100. Elevations of this magnitude would inundate low-lying coastal areas with saltwater, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats. Under the lower warming range scenario, sea level could rise 12-14 inches.

## **2.7 REGULATORY SETTING**

### **INTERNATIONAL**

Climate change is a global issue involving GHG emissions from all around the world; therefore, countries such as the ones discussed below have made an effort to reduce GHGs.

**Intergovernmental Panel on Climate Change.** In 1988, the United Nations and the World Meteorological Organization established the IPCC to assess the scientific, technical and socioeconomic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts, and options for adaptation and mitigation.

**United Nation's Framework Convention on Climate Change ("Convention").** On March 21, 1994, the U.S. joined a number of countries around the world in signing the Convention. Under the Convention, governments gather and share information on GHG emissions, national policies, and best practices; launch national strategies for addressing GHG emissions and adapting to

expected impacts, including the provision of financial and technological support to developing countries; and cooperate in preparing for adaptation to the impacts of climate change.

**International Climate Change Treaties.** The Kyoto Protocol is an international agreement linked to the Convention. The major feature of the Kyoto Protocol is that it sets binding targets for 37 industrialized countries and the European community for reducing GHG emissions at an average of five percent against 1990 levels over the five-year period 2008–2012. The Convention (as discussed above) encouraged industrialized countries to stabilize emissions; however, the Protocol commits them to do so. Developed countries have contributed more emissions over the last 150 years; therefore, the Protocol places a heavier burden on developed nations under the principle of “common but differentiated responsibilities.”

In 2001, President George W. Bush indicated that he would not submit the treaty to the U.S. Senate for ratification, which effectively ended American involvement in the Kyoto Protocol. In December 2009, international leaders met in Copenhagen to address the future of international climate change commitments post-Kyoto. No binding agreement was reached in Copenhagen; however, the Committee identified the long-term goal of limiting the maximum global average temperature increase to no more than 2° Celsius above pre-industrial levels, subject to a review in 2015. The UN Climate Change Committee held additional meetings in Durban, South Africa in November 2011; Doha, Qatar in November 2012; and Warsaw, Poland in November 2013. The meetings are gradually gaining consensus among participants on individual climate change issues.

On September 23, 2014 more than 100 Heads of State and Government and leaders from the private sector and civil society met at the Climate Summit in New York hosted by the United Nations. At the Summit, heads of government, business and civil society announced actions in areas that would have the greatest impact on reducing emissions, including climate finance, energy, transport, industry, agriculture, cities, forests, and building resilience.

Parties to the U.N. Framework Convention on Climate Change (UNFCCC) reached a landmark agreement on December 12, 2015 in Paris, charting a fundamentally new course in the two-decade-old global climate effort. Culminating a four-year negotiating round, the new treaty ends the strict differentiation between developed and developing countries that characterized earlier efforts, replacing it with a common framework that commits all countries to put forward their best efforts and to strengthen them in the years ahead. This includes, for the first time, requirements that all parties report regularly on their emissions and implementation efforts and undergo international review.

The agreement and a companion decision by parties were the key outcomes of the conference, known as the 21<sup>st</sup> session of the UNFCCC Conference of the Parties (COP) 21. Together, the Paris Agreement and the accompanying COP decision:

- Reaffirm the goal of limiting global temperature increase well below 2 degrees Celsius, while urging efforts to limit the increase to 1.5 degrees;
- Establish binding commitments by all parties to make “nationally determined contributions” (NDCs), and to pursue domestic measures aimed at achieving them;

- Commit all countries to report regularly on their emissions and “progress made in implementing and achieving” their NDCs, and to undergo international review;
- Commit all countries to submit new NDCs every five years, with the clear expectation that they will “represent a progression” beyond previous ones;
- Reaffirm the binding obligations of developed countries under the UNFCCC to support the efforts of developing countries, while for the first time encouraging voluntary contributions by developing countries too;
- Extend the current goal of mobilizing \$100 billion a year in support by 2020 through 2025, with a new, higher goal to be set for the period after 2025;
- Extend a mechanism to address “loss and damage” resulting from climate change, which explicitly will not “involve or provide a basis for any liability or compensation;”
- Require parties engaging in international emissions trading to avoid “double counting;” and
- Call for a new mechanism, similar to the Clean Development Mechanism under the Kyoto Protocol, enabling emission reductions in one country to be counted toward another country’s NDC (C2ES 2015a) (29).

On June 2, 2017 President Donald Trump announced his intention to withdraw from the Paris Agreement. It should be noted that under the terms of the agreement, the United States cannot formally announce its resignation until November 4, 2019. Subsequently, withdrawal would be effective one year after notification in 2020.

## NATIONAL

Prior to the last decade, there have been no concrete federal regulations of GHGs or major planning for climate change adaptation. The following are actions regarding the federal government, GHGs, and fuel efficiency.

**GHG Endangerment.** In *Massachusetts v. Environmental Protection Agency* 549 U.S. 497 (2007), decided on April 2, 2007, the Supreme Court found that four GHGs, including carbon dioxide, are air pollutants subject to regulation under Section 202(a)(1) of the Clean Air Act (CAA). The Court held that the EPA Administrator must determine whether emissions of GHGs from new motor vehicles cause or contribute to air pollution, which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. On December 7, 2009, the EPA Administrator signed two distinct findings regarding GHGs under section 202(a) of the CAA:

- **Endangerment Finding:** The Administrator finds that the current and projected concentrations of the six key well-mixed GHGs—carbon dioxide, methane, nitrous oxide, HFCs, PFCs, and sulfur hexafluoride—in the atmosphere threaten the public health and welfare of current and future generations.
- **Cause or Contribute Finding:** The Administrator finds that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution, which threatens public health and welfare.

These findings do not impose requirements on industry or other entities. However, this was a prerequisite for implementing GHG emissions standards for vehicles, as discussed in the section “Clean Vehicles” below. After a lengthy legal challenge, the U.S. Supreme Court declined to review an Appeals Court ruling that upheld the EPA Administrator’s findings (30).

**Clean Vehicles.** Congress first passed the Corporate Average Fuel Economy law in 1975 to increase the fuel economy of cars and light duty trucks. The law has become more stringent over time. On May 19, 2009, President Obama put in motion a new national policy to increase fuel economy for all new cars and trucks sold in the U.S. On April 1, 2010, the EPA and the Department of Transportation’s National Highway Traffic Safety Administration (NHTSA) announced a joint final rule establishing a national program that would reduce GHG emissions and improve fuel economy for new cars and trucks sold in the U.S.

The first phase of the national program applies to passenger cars, light-duty trucks, and medium-duty (MD) passenger vehicles, covering model years 2012 through 2016. They require these vehicles to meet an estimated combined average emissions level of 250 grams of carbon dioxide per mile, equivalent to 35.5 miles per gallon (mpg) if the automobile industry were to meet this carbon dioxide level solely through fuel economy improvements. Together, these standards would cut carbon dioxide emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012–2016). The EPA and the NHTSA issued final rules on a second-phase joint rulemaking establishing national standards for light-duty vehicles for model years 2017 through 2025 in August 2012 (EPA 2012c). The new standards for model years 2017 through 2025 apply to passenger cars, light-duty trucks, and MD passenger vehicles. The final standards are projected to result in an average industry fleetwide level of 163 grams/mile of carbon dioxide (CO<sub>2</sub>) in model year 2025, which is equivalent to 54.5 mpg if achieved exclusively through fuel economy improvements.

The EPA and the U.S. Department of Transportation issued final rules for the first national standards to reduce GHG emissions and improve fuel efficiency of heavy-duty (HD) trucks and buses on September 15, 2011, effective November 14, 2011. For combination tractors, the agencies are proposing engine and vehicle standards that begin in the 2014 model year and achieve up to a 20 percent reduction in carbon dioxide emissions and fuel consumption by the 2018 model year. For HD pickup trucks and vans, the agencies are proposing separate gasoline and diesel truck standards, which phase in starting in the 2014 model year and achieve up to a 10-percent reduction for gasoline vehicles and a 15 percent reduction for diesel vehicles by the 2018 model year (12 and 17 percent respectively if accounting for air conditioning leakage). Lastly, for vocational vehicles, the engine and vehicle standards would achieve up to a 10 percent reduction in fuel consumption and carbon dioxide emissions from the 2014 to 2018 model years.

On April 2, 2018, the EPA signed the Mid-term Evaluation Final Determination, which finds that the model year 2022-2025 GHG standards are not appropriate and should be revised (31). This Final Determination serves to initiate a notice to further consider appropriate standards for model year 2022-2025 light-duty vehicles. On August 24, 2018, the EPA and NHTSA published a proposal to freeze the model year 2020 standards through model year 2026 and to revoke California’s waiver under the CAA to establish more stringent standards (32).

**Mandatory Reporting of GHGs.** The Consolidated Appropriations Act of 2008, passed in December 2007, requires the establishment of mandatory GHG reporting requirements. On September 22, 2009, the EPA issued the Final Mandatory Reporting of GHGs Rule, which became effective January 1, 2010. The rule requires reporting of GHG emissions from large sources and suppliers in the U.S. and is intended to collect accurate and timely emissions data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions are required to submit annual reports to the EPA.

**New Source Review.** The EPA issued a final rule on May 13, 2010, that establishes thresholds for GHGs that define when permits under the New Source Review Prevention of Significant Deterioration and Title V Operating Permit programs are required for new and existing industrial facilities. This final rule “tailors” the requirements of these CAA permitting programs to limit which facilities will be required to obtain Prevention of Significant Deterioration and Title V permits. In the preamble to the revisions to the Federal Code of Regulations, the EPA states:

*This rulemaking is necessary because without it the Prevention of Significant Deterioration and Title V requirements would apply, as of January 2, 2011, at the 100 or 250 tons per year levels provided under the Clean Air Act, greatly increasing the number of required permits, imposing undue costs on small sources, overwhelming the resources of permitting authorities, and severely impairing the functioning of the programs. EPA is relieving these resource burdens by phasing in the applicability of these programs to GHG sources, starting with the largest GHG emitters. This rule establishes two initial steps of the phase-in. The rule also commits the agency to take certain actions on future steps addressing smaller sources but excludes certain smaller sources from Prevention of Significant Deterioration and Title V permitting for GHG emissions until at least April 30, 2016.*

The EPA estimates that facilities responsible for nearly 70 percent of the national GHG emissions from stationary sources will be subject to permitting requirements under this rule. This includes the nation’s largest GHG emitters—power plants, refineries, and cement production facilities.

**Standards of Performance for GHG Emissions for New Stationary Sources: Electric Utility Generating Units.** As required by a settlement agreement, the EPA proposed new performance standards for emissions of carbon dioxide for new, affected, fossil fuel-fired electric utility generating units on March 27, 2012. New sources greater than 25 megawatts would be required to meet an output-based standard of 1,000 pounds of carbon dioxide per megawatt-hour, based on the performance of widely used natural gas combined cycle technology. It should be noted that on February 9, 2016 the U.S. Supreme Court issued a stay of this regulation pending litigation. Additionally, the current EPA Administrator has also signed a measure to repeal the Clean Power Plan, including the CO<sub>2</sub> standards.

**Cap-and-Trade.** Cap-and-trade refers to a policy tool where emissions are limited to a certain amount and can be traded or provides flexibility on how the emitter can comply. Successful examples in the U.S. include the Acid Rain Program and the Nitrous Oxide (NO<sub>x</sub>) Budget Trading Program and Clean Air Interstate Rule in the northeast. There is no federal GHG cap-and-trade

program currently; however, some states have joined to create initiatives to provide a mechanism for cap-and-trade.

The Regional GHG Initiative is an effort to reduce GHGs among the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. Each state caps carbon dioxide emissions from power plants, auctions carbon dioxide emission allowances, and invests the proceeds in strategic energy programs that further reduce emissions, save consumers money, create jobs, and build a clean energy economy. The Initiative began in 2008.

The Western Climate Initiative partner jurisdictions have developed a comprehensive initiative to reduce regional GHG emissions to 15 percent below 2005 levels by 2020. The partners were originally California, British Columbia, Manitoba, Ontario, and Quebec. However, Manitoba and Ontario are not currently participating. California linked with Quebec's cap-and-trade system January 1, 2014, and joint offset auctions took place in 2015 (C2ES 2015).

**SmartWay Program.** The SmartWay Program is a public-private initiative between the EPA, large and small trucking companies, rail carriers, logistics companies, commercial manufacturers, retailers, and other federal and state agencies. Its purpose is to improve fuel efficiency and the environmental performance (reduction of both GHG emissions and air pollution) of the goods movement supply chains. SmartWay is comprised of four components (EPA 2014):

1. SmartWay Transport Partnership: A partnership in which freight carriers and shippers commit to benchmark operations, track fuel consumption, and improve performance annually.
2. SmartWay Technology Program: A testing, verification, and designation program to help freight companies identify equipment, technologies, and strategies that save fuel and lower emissions.
3. SmartWay Vehicles: A program that ranks light-duty cars and small trucks and identifies superior environmental performers with the SmartWay logo.
4. SmartWay International Interests: Guidance and resources for countries seeking to develop freight sustainability programs modeled after SmartWay.

SmartWay effectively refers to requirements geared towards reducing fuel consumption. Most large trucking fleets driving newer vehicles are compliant with SmartWay design requirements. Moreover, over time, all HD trucks will have to comply with the CARB GHG Regulation that is designed with the SmartWay Program in mind, to reduce GHG emissions by making them more fuel-efficient. For instance, in 2015, 53 foot or longer dry vans or refrigerated trailers equipped with a combination of SmartWay-verified low-rolling resistance tires and SmartWay-verified aerodynamic devices would obtain a total of 10 percent or more fuel savings over traditional trailers.

Through the SmartWay Technology Program, the EPA has evaluated the fuel saving benefits of various devices through grants, cooperative agreements, emissions and fuel economy testing, demonstration projects and technical literature review. As a result, the EPA has determined the following types of technologies provide fuel saving and/or emission reducing benefits when used properly in their designed applications, and has verified certain products:

- Idle reduction technologies – less idling of the engine when it is not needed would reduce fuel consumption.
- Aerodynamic technologies minimize drag and improve airflow over the entire tractor-trailer vehicle. Aerodynamic technologies include gap fairings that reduce turbulence between the tractor and trailer, side skirts that minimize wind under the trailer, and rear fairings that reduce turbulence and pressure drop at the rear of the trailer.
- Low rolling resistance tires can roll longer without slowing down, thereby reducing the amount of fuel used. Rolling resistance (or rolling friction or rolling drag) is the force resisting the motion when a tire rolls on a surface. The wheel will eventually slow down because of this resistance.
- Retrofit technologies include things such as diesel particulate filters, emissions upgrades (to a higher tier), etc., which would reduce emissions.
- Federal excise tax exemptions.

## CALIFORNIA

### Legislative Actions to Reduce GHGs

The State of California legislature has enacted a series of bills that constitute the most aggressive program to reduce GHGs of any state in the nation. Some legislation such as the landmark AB 32 was specifically enacted to address GHG emissions. Other legislation such as Title 24 and Title 20 energy standards were originally adopted for other purposes such as energy and water conservation, but also provide GHG reductions. This section describes the major provisions of the legislation.

**AB 32.** The California State Legislature enacted AB 32, which requires that GHGs emitted in California be reduced to 1990 levels by the year 2020. “GHGs” as defined under AB 32 include carbon dioxide, methane, N<sub>2</sub>O, HFCs, PFCs, and sulfur hexafluoride. Since AB 32 was enacted, a seventh chemical, nitrogen trifluoride, has also been added to the list of GHGs. The CARB is the state agency charged with monitoring and regulating sources of GHGs. AB 32 states the following:

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

CARB approved the 1990 GHG emissions level of 427 MMTCO<sub>2</sub>e on December 6, 2007 (CARB 2007). Therefore, emissions generated in California in 2020 are required to be equal to or less than 427 MMTCO<sub>2</sub>e. Emissions in 2020 in a “business as usual” (BAU) scenario were estimated to be 596 MMTCO<sub>2</sub>e, which do not account for reductions from AB 32 regulations (CARB 2008). At that level, a 28.4 percent reduction was required to achieve the 427 MMTCO<sub>2</sub>e 1990 inventory. In October 2010, CARB prepared an updated 2020 forecast to account for the recession and



slower forecasted growth. The forecasted inventory without the benefits of adopted regulation is now estimated at 545 MMTCO<sub>2</sub>e. Therefore, under the updated forecast, a 21.7 percent reduction from BAU is required to achieve 1990 levels (CARB 2010).

### **Progress in Achieving AB 32 Targets and Remaining Reductions Required**

The State has made steady progress in implementing AB 32 and achieving targets included in Executive Order S-3-05. The progress is shown in updated emission inventories prepared by CARB for 2000 through 2012 (CARB 2014a). The State has achieved the Executive Order S-3-05 target for 2010 of reducing GHG emissions to 2000 levels. As shown below, the 2010 emission inventory achieved this target.

- 1990: 427 MMTCO<sub>2</sub>e (AB 32 2020 target)
- 2000: 463 MMTCO<sub>2</sub>e (an average 8 percent reduction needed to achieve 1990 base)
- 2010: 450 MMTCO<sub>2</sub>e (an average 5 percent reduction needed to achieve 1990 base)

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

- 2020: 545 MMTCO<sub>2</sub>e BAU (an average 21.7 percent reduction from BAU needed to achieve 1990 base)

**CARB Scoping Plan.** CARB's Climate Change Scoping Plan ("Scoping Plan") contains measures designed to reduce the State's emissions to 1990 levels by the year 2020 to comply with AB 32 (CARB 2008). The Scoping Plan identifies recommended measures for multiple GHG emission sectors and the associated emission reductions needed to achieve the year 2020 emissions target—each sector has a different emission reduction target. Most of the measures target the transportation and electricity sectors. As stated in the Scoping Plan, the key elements of the strategy for achieving the 2020 GHG target include:

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

The CARB approved the First Update to the Scoping Plan (“Update”) on May 22, 2014. The Update identifies the next steps for California’s climate change strategy. The Update shows how California continues on its path to meet the near-term 2020 GHG limit, but also sets a path toward long-term, deep GHG emission reductions. The report establishes a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050. The Update identifies progress made to meet the near-term objectives of AB 32 and defines California’s climate change priorities and activities for the next several years. The Update does not set new targets for the State but describes a path that would achieve the long term 2050 goal of Executive Order S-05-03 for emissions to decline to 80 percent below 1990 levels by 2050 (CARB 2014).

Forecasting the amount of emissions that would occur in 2020 if no actions are taken was necessary to assess the amount of reductions California must achieve to return to the 1990 emissions level by 2020 as required by AB 32. The no-action scenario is known as “business-as-usual” or BAU. The CARB originally defined the BAU scenario as emissions in the absence of any GHG emission reduction measures discussed in the Scoping Plan.

As part of CEQA compliance for the Scoping Plan, CARB prepared a Supplemental Functional Equivalent Document (FED) in 2011. The FED included an updated 2020 BAU emissions inventory projection based on current economic forecasts (i.e., as influenced by the economic downturn) and emission reduction measures already in place, replacing its prior 2020 BAU emissions inventory. CARB staff derived the updated emissions estimates by projecting emissions growth, by sector, from the state’s average emissions from 2006–2008. The new BAU estimate includes emission reductions for the million-solar-roofs program, the AB 1493 (Pavley I) motor vehicle GHG emission standards, and the LCFS. In addition, CARB factored into the 2020 BAU inventory emissions reductions associated with 33 percent Renewables Portfolio Standard (RPS) for electricity generation. The updated BAU estimate of 507 MMTCO<sub>2e</sub> by 2020 requires a reduction of 80 MMTCO<sub>2e</sub>, or a 16 percent reduction below the estimated BAU levels to return to 1990 levels (i.e., 427 MMTCO<sub>2e</sub>) by 2020.

In order to provide a BAU reduction that is consistent with the original definition in the Scoping Plan and with threshold definitions used in thresholds adopted by lead agencies for CEQA purposes and many climate action plans, the updated inventory without regulations was also included in the Supplemental FED. The CARB 2020 BAU projection for GHG emissions in California was originally estimated to be 596 MMTCO<sub>2e</sub>. The updated CARB 2020 BAU projection in the Supplemental FED is 545 MMTCO<sub>2e</sub>. Considering the updated BAU estimate of 545 MMTCO<sub>2e</sub> by 2020, CARB estimates a 21.7 percent reduction below the estimated statewide BAU levels is necessary to return to 1990 emission levels (i.e., 427 MMTCO<sub>2e</sub>) by 2020, instead of the approximate 28.4 percent BAU reduction previously reported under the original Climate Change Scoping Plan (2008).

## 2017 Climate Change Scoping Plan Update

In November 2017, CARB released the final 2017 Scoping Plan Update, which identifies the State's post-2020 reduction strategy. The 2017 Scoping Plan Update reflects the 2030 target of a 40 percent reduction below 1990 levels, set by Executive Order B-30-15 and codified by Senate Bill 32 (SB 32). Key programs that the proposed Second Update builds upon include the Cap-and-Trade Regulation, the LCFS, and much cleaner cars, trucks and freight movement, utilizing cleaner, renewable energy, and strategies to reduce methane emissions from agricultural and other wastes.

The 2017 Scoping Plan establishes a new emissions limit of 260 MMTCO<sub>2</sub>e for the year 2030, which corresponds to a 40 percent decrease in 1990 levels by 2030.

California's climate strategy will require contributions from all sectors of the economy, including the land base, and will include enhanced focus on zero- and near-zero-emission (ZE/NZE) vehicle technologies; continued investment in renewables, including solar roofs, wind, and other distributed generation; greater use of low carbon fuels; integrated land conservation and development strategies; coordinated efforts to reduce emissions of short-lived climate pollutants (methane, black carbon, and fluorinated gases); and an increased focus on integrated land use planning to support livable, transit-connected communities and conservation of agricultural and other lands. Requirements for direct GHG reductions at refineries will further support air quality co-benefits in neighborhoods, including in disadvantaged communities historically located adjacent to these large stationary sources, as well as efforts with California's local air pollution control and air quality management districts (air districts) to tighten emission limits on a broad spectrum of industrial sources. Major elements of the 2017 Scoping Plan framework include:

- Implementing and/or increasing the standards of the Mobile Source Strategy, which include increasing ZEV buses and trucks.
- LCFS, with an increased stringency (18 percent by 2030).
- Implementing SB 350, which expands the RPS to 50 percent RPS and doubles energy efficiency savings by 2030.
- California Sustainable Freight Action Plan, which improves freight system efficiency, utilizes near-zero emissions technology, and deployment of zero-emission vehicles (ZEV) trucks.
- Implementing the proposed Short-Lived Climate Pollutant Strategy (SLPS), which focuses on reducing methane and hydrofluorocarbon emissions by 40 percent and anthropogenic black carbon emissions by 50 percent by year 2030.
- Continued implementation of SB 375.
- Post-2020 Cap-and-Trade Program that includes declining caps.
- 20 percent reduction in GHG emissions from refineries by 2030.
- Development of a Natural and Working Lands Action Plan to secure California's land base as a net carbon sink.

Note, however, that the 2017 Scoping Plan acknowledges that:

*[a]chieving net zero increases in GHG emissions, resulting in no contribution to GHG impacts, may not be feasible or appropriate for every project, however, and the inability of a project to mitigate its GHG emissions to net zero does not imply the project results in a substantial contribution to the cumulatively significant environmental impact of climate change under CEQA.*

In addition to the statewide strategies listed above, the 2017 Scoping Plan also identifies local governments as essential partners in achieving the State's long-term GHG reduction goals and identifies local actions to reduce GHG emissions. As part of the recommended actions, CARB recommends that local governments achieve a community-wide goal to achieve emissions of no more than 6 metric tons of CO<sub>2</sub>e (MTCO<sub>2</sub>e) or less per capita by 2030 and 2 MTCO<sub>2</sub>e or less per capita by 2050. For CEQA projects, CARB states that lead agencies may develop evidenced-based bright-line numeric thresholds—consistent with the Scoping Plan and the State's long-term GHG goals—and projects with emissions over that amount may be required to incorporate on-site design features and mitigation measures that avoid or minimize project emissions to the degree feasible; or, a performance-based metric using a climate action plan or other plan to reduce GHG emissions is appropriate.

According to research conducted by the Lawrence Berkeley National Laboratory (LBNL) and supported by CARB, California, under its existing and proposed GHG reduction policies, is on track to meet the 2020 reduction targets under AB 32 and could achieve the 2030 goals under SB 32. The research utilized a new, validated model known as the California LBNL GHG Analysis of Policies Spreadsheet (CALGAPS), which simulates GHG and criteria pollutant emissions in California from 2010 to 2050 in accordance to existing and future GHG-reducing policies. The CALGAPS model showed that GHG emissions through 2020 could range from 317 to 415 MTCO<sub>2</sub>e per year, "indicating that existing state policies will likely allow California to meet its target [of 2020 levels under AB 32]." CALGAPS also showed that by 2030, emissions could range from 211 to 428 MTCO<sub>2</sub>e per year, indicating that "even if all modeled policies are not implemented, reductions could be sufficient to reduce emissions 40 percent below the 1990 level [of SB 32]." CALGAPS analyzed emissions through 2050 even though it did not generally account for policies that might be put in place after 2030. Although the research indicated that the emissions would not meet the State's 80 percent reduction goal by 2050, various combinations of policies could allow California's cumulative emissions to remain very low through 2050 (33) (34).

**Senate Bill 32.** On September 8, 2016, Governor Jerry Brown signed the Senate Bill (SB) 32 and its companion bill, Assembly Bill (AB) 197. SB 32 requires the state to reduce statewide GHG emissions to 40 percent below 1990 levels by 2030, a reduction target that was first introduced in Executive Order B-30-15. The new legislation builds upon the AB 32 goal of 1990 levels by 2020 and provides an intermediate goal to achieving S-3-05, which sets a statewide GHG reduction target of 80 percent below 1990 levels by 2050. AB 197 creates a legislative committee to oversee regulators to ensure that CARB not only responds to the Governor, but also the Legislature (11).

**Cap-and-Trade Program.** The Scoping Plan identifies a Cap-and-Trade Program as one of the key strategies for California to reduce GHG emissions. According to CARB, a cap-and-trade program

will help put California on the path to meet its goal of reducing GHG emissions to 1990 levels by the year 2020 and ultimately achieving an 80 percent reduction from 1990 levels by 2050. Under cap-and-trade, an overall limit on GHG emissions from capped sectors is established, and facilities subject to the cap will be able to trade permits to emit GHGs within the overall limit.

CARB adopted a California Cap-and-Trade Program pursuant to its authority under AB 32. See Title 17 of the California Code of Regulations (CCR) §§ 95800 to 96023). The Cap-and-Trade Program is designed to reduce GHG emissions from major sources (deemed “covered entities”) by setting a firm cap on statewide GHG emissions and employing market mechanisms to achieve AB 32’s emission-reduction mandate of returning to 1990 levels of emissions by 2020. The statewide cap for GHG emissions from the capped sectors (e.g., electricity generation, petroleum refining, and cement production) commenced in 2013 and will decline over time, achieving GHG emission reductions throughout the program’s duration.

Covered entities that emit more than 25,000 MTCO<sub>2</sub>e per year must comply with the Cap-and-Trade Program. Triggering of the 25,000 MTCO<sub>2</sub>e per year “inclusion threshold” is measured against a subset of emissions reported and verified under the California Regulation for the Mandatory Reporting of GHG Emissions (Mandatory Reporting Rule or “MRR”).

Under the Cap-and-Trade Program, CARB issues allowances equal to the total amount of allowable emissions over a given compliance period and distributes these to regulated entities. Covered entities are allocated free allowances in whole or part (if eligible), and may buy allowances at auction, purchase allowances from others, or purchase offset credits. Each covered entity with a compliance obligation is required to surrender “compliance instruments” (30) for each MTCO<sub>2</sub>e of GHG they emit. There also are requirements to surrender compliance instruments covering 30 percent of the prior year’s compliance obligation by November of each year. For example, in November 2014, a covered entity was required to submit compliance instruments to cover 30 percent of its 2013 GHG emissions.

The Cap-and-Trade Program provides a firm cap, ensuring that the 2020 statewide emission limit will not be exceeded. An inherent feature of the Cap-and-Trade program is that it does not guarantee GHG emissions reductions in any discrete location or by any particular source. Rather, GHG emissions reductions are only guaranteed on an accumulative basis. As summarized by CARB in the First Update:

*The Cap-and-Trade Regulation gives companies the flexibility to trade allowances with others or take steps to cost-effectively reduce emissions at their own facilities. Companies that emit more have to turn in more allowances or other compliance instruments. Companies that can cut their GHG emissions have to turn in fewer allowances. But as the cap declines, aggregate emissions must be reduced. In other words, a covered entity theoretically could increase its GHG emissions every year and still comply with the Cap-and-Trade Program if there is a reduction in GHG emissions from other covered entities. Such a focus on aggregate GHG emissions is considered appropriate because climate change is a global phenomenon, and the effects of GHG emissions are considered cumulative (CARB 2014).*

The Cap-and-Trade Program works with other direct regulatory measures and provides an economic incentive to reduce emissions. If California's direct regulatory measures reduce GHG emissions more than expected, then the Cap-and-Trade Program will be responsible for relatively fewer emissions reductions. If California's direct regulatory measures reduce GHG emissions less than expected, then the Cap-and-Trade Program will be responsible for relatively more emissions reductions. Thus, the Cap-and-Trade Program assures that California will meet its 2020 GHG emissions reduction mandate:

*The Cap-and-Trade Program establishes an overall limit on GHG emissions from most of the California economy—the “capped sectors.” Within the capped sectors, some of the reductions are being accomplished through direct regulations, such as improved building and appliance efficiency standards, the [Low Carbon Fuel Standard] LCFS, and the 33 percent [Renewables Portfolio Standard] RPS. Whatever additional reductions are needed to bring emissions within the cap is accomplished through price incentives posed by emissions allowance prices. Together, direct regulation and price incentives assure that emissions are brought down cost-effectively to the level of the overall cap. The Cap-and-Trade Regulation provides assurance that California's 2020 limit will be met because the regulation sets a firm limit on 85 percent of California's GHG emissions. In sum, the Cap-and-Trade Program will achieve aggregate, rather than site specific or project-level, GHG emissions reductions. Also, due to the regulatory architecture adopted by CARB in AB 32, the reductions attributed to the Cap-and-Trade Program can change over time depending on the State's emissions forecasts and the effectiveness of direct regulatory measures (CARB 2014).*

As of January 1, 2015, the Cap-and-Trade Program covered approximately 85 percent of California's GHG emissions. The Cap-and-Trade Program covers the GHG emissions associated with electricity consumed in California, whether generated in-state or imported. Accordingly, GHG emissions associated with CEQA projects' electricity usage are covered by the Cap-and-Trade Program.

The Cap-and-Trade Program also covers fuel suppliers (natural gas and propane fuel providers and transportation fuel providers) to address emissions from such fuels and from combustion of other fossil fuels not directly covered at large sources in the Program's first compliance period. While the Cap-and-Trade Program technically covered fuel suppliers as early as 2012, they did not have a compliance obligation (i.e., they were not fully regulated) until 2015. The Cap-and-Trade Program covers the GHG emissions associated with the combustion of transportation fuels in California, whether refined in-state or imported. The point of regulation for transportation fuels is when they are “supplied” (i.e., delivered into commerce). Accordingly, as with stationary source GHG emissions and GHG emissions attributable to electricity use, virtually all, if not all, of GHG emissions from CEQA projects associated with VMT are covered by the Cap-and-Trade Program (CARB 2015) (35).

In addition, the Scoping Plan differentiates between “capped” and “uncapped” strategies. “Capped” strategies are subject to the proposed cap-and-trade program. The Scoping Plan states that the inclusion of these emissions within the Program will help ensure that the year 2020

emission targets are met despite some degree of uncertainty in the emission reduction estimates for any individual measure. Implementation of the capped strategies is calculated to achieve a sufficient amount of reductions by 2020 to achieve the emission target contained in AB 32. “Uncapped” strategies that will not be subject to the cap-and-trade emissions caps and requirements are provided as a margin of safety by accounting for additional GHG emission reductions.<sup>3</sup>

**SB 375 – the Sustainable Communities and Climate Protection Act of 2008.** Passing the Senate on August 30, 2008, Senate Bill (SB) 375 was signed by the Governor on September 30, 2008. According to SB 375, the transportation sector is the largest contributor of GHG emissions, which emits over 40 percent of the total GHG emissions in California. SB 375 states, “Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32.” SB 375 does the following: it (1) requires metropolitan planning organizations to include sustainable community strategies in their regional transportation plans for reducing GHG emissions, (2) aligns planning for transportation and housing, and (3) creates specified incentives for the implementation of the strategies.

Concerning CEQA, SB 375, as codified in Public Resources Code Section 21159.28, states that CEQA findings for certain projects are not required to reference, describe, or discuss (1) growth inducing impacts, or (2) any project-specific or cumulative impacts from cars and light-duty truck trips generated by the project on global warming or the regional transportation network, if the project:

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

**AB 1493 Pavley Regulations and Fuel Efficiency Standards.** California AB 1493, enacted on July 22, 2002, required CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. Implementation of the regulation was delayed by lawsuits filed by automakers and by the EPA’s denial of an implementation waiver. The EPA subsequently granted the requested waiver in 2009, which was upheld by the U.S. District Court for the District of Columbia in 2011.

The standards phase in during the 2009 through 2016 model years. When fully phased in, the near-term (2009–2012) standards will result in about a 22 percent reduction compared with the 2002 fleet, and the mid-term (2013–2016) standards will result in about a 30 percent reduction. Several technologies stand out as providing significant reductions in emissions at favorable costs.

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<sup>3</sup> On March 17, 2011, the San Francisco Superior Court issued a final decision in *Association of Irrigated Residents v. California Air Resources Board* (Case No. CPF-09-509562). While the Court upheld the validity of the CARB Scoping Plan for the implementation of AB 32, the Court enjoined CARB from further rulemaking under AB 32 until CARB amends its CEQA environmental review of the Scoping Plan to address the flaws identified by the Court. On May 23, 2011, CARB filed an appeal. On June 24, 2011, the Court of Appeal granted CARB’s petition staying the trial court’s order pending consideration of the appeal. In the interest of informed decision-making, on June 13, 2011, CARB released the expanded alternatives analysis in a draft Supplement to the AB 32 Scoping Plan Functional Equivalent Document. The CARB Board approved the Scoping Plan and the CEQA document on August 24, 2011.

These include discrete variable valve lift or camless valve actuation to optimize valve operation rather than relying on fixed valve timing and lift as has historically been done; turbocharging to boost power and allow for engine downsizing; improved multi-speed transmissions; and improved air conditioning systems that operate optimally, leak less, and/or use an alternative refrigerant.

The second phase of the implementation for the Pavley bill was incorporated into Amendments to the Low-Emission Vehicle Program referred to as LEV III or the Advanced Clean Cars program. The Advanced Clean Car program combines the control of smog-causing pollutants and GHG emissions into a single coordinated package of requirements for model years 2017 through 2025. The regulation will reduce GHGs from new cars by 34 percent from 2016 levels by 2025. The new rules will clean up gasoline and diesel-powered cars, and deliver increasing numbers of zero-emission technologies, such as full battery electric cars, newly emerging plug-in hybrid electric vehicles and hydrogen fuel cell cars. The package will also ensure adequate fueling infrastructure is available for the increasing numbers of hydrogen fuel cell vehicles planned for deployment in California.

**SB 350— Clean Energy and Pollution Reduction Act of 2015.** In October 2015, the legislature approved, and the Governor signed SB 350, which reaffirms California’s commitment to reducing its GHG emissions and addressing climate change. Key provisions include an increase in the RPS, higher energy efficiency requirements for buildings, initial strategies towards a regional electricity grid, and improved infrastructure for electric vehicle charging stations. Provisions for a 50 percent reduction in the use of petroleum statewide were removed from the Bill because of opposition and concern that it would prevent the Bill’s passage. Specifically, SB 350 requires the following to reduce statewide GHG emissions:

- Increase the amount of electricity procured from renewable energy sources from 33 percent to 50 percent by 2030, with interim targets of 40 percent by 2024, and 25 percent by 2027.
- Double the energy efficiency in existing buildings by 2030. This target will be achieved through the California Public Utility Commission (CPUC), the California Energy Commission (CEC), and local publicly owned utilities.
- Reorganize the Independent System Operator to develop more regional electrify transmission markets and to improve accessibility in these markets, which will facilitate the growth of renewable energy markets in the western United States (California Leginfo 2015).

#### **EXECUTIVE ORDERS RELATED TO GHG EMISSIONS**

California’s Executive Branch has taken several actions to reduce GHGs through the use of Executive Orders. Although not regulatory, they set the tone for the state and guide the actions of state agencies.

**Executive Order B-55-18 and SB 100.** Executive Order B-55-18 and SB 100. SB 100 and Executive Order B-55-18 were signed by Governor Brown on September 10, 2018. Under the existing RPS, 25 percent of retail sales are required to be from renewable sources by December 31, 2016, 33 percent by December 31, 2020, 40 percent by December 31, 2024, 45 percent by December 31, 2027, and 50 percent by December 31, 2030. SB 100 raises California’s RPS requirement to 50 percent renewable resources target by December 31, 2026, and to achieve a 60 percent target



by December 31, 2030. SB 100 also requires that retail sellers and local publicly owned electric utilities procure a minimum quantity of electricity products from eligible renewable energy resources so that the total kilowatt hours of those products sold to their retail end-use customers achieve 44 percent of retail sales by December 31, 2024, 52 percent by December 31, 2027, and 60 percent by December 31, 2030. In addition to targets under AB 32 and SB 32, Executive Order B-55-18 establishes a carbon neutrality goal for the state of California by 2045; and sets a goal to maintain net negative emissions thereafter. The Executive Order directs the California Natural Resources Agency (CNRA), California Environmental Protection Agency (CalEPA), the Department of Food and Agriculture (CDFA), and CARB to include sequestration targets in the Natural and Working Lands Climate Change Implementation Plan consistent with the carbon neutrality goal.

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

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

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

**Executive Order S-01-07 – Low Carbon Fuel Standard.** The Governor signed Executive Order S-01-07 on January 18, 2007. The order mandates that a statewide goal shall be established to reduce the carbon intensity of California’s transportation fuels by at least 10 percent by 2020. In particular, the Executive Order established a LCFS and directed the Secretary for Environmental Protection to coordinate the actions of the CEC, the CARB, the University of California, and other agencies to develop and propose protocols for measuring the “life-cycle carbon intensity” of transportation fuels. This analysis supporting development of the protocols was included in the State Implementation Plan for alternative fuels (State Alternative Fuels Plan adopted by CEC on December 24, 2007) and was submitted to CARB for consideration as an “early action” item under AB 32. The CARB adopted the LCFS on April 23, 2009.

The LCFS was challenged in the U.S. District Court in Fresno in 2011. The court’s ruling issued on December 29, 2011, included a preliminary injunction against CARB’s implementation of the rule. The Ninth Circuit Court of Appeals stayed the injunction on April 23, 2012, pending final ruling on appeal, allowing CARB to continue to implement and enforce the regulation. The Ninth Circuit Court’s decision, filed September 18, 2013, vacated the preliminary injunction. In essence, the court held that LCFS adopted by CARB were not in conflict with federal law. On August 8, 2013, the Fifth District Court of Appeal (California) ruled CARB failed to comply with CEQA and the Administrative Procedure Act (APA) when adopting regulations for LCFS. In a partially published opinion, the Court of Appeal reversed the trial court’s judgment and directed issuance of a writ of mandate setting aside Resolution 09-31 and two executive orders of CARB approving LCFS regulations promulgated to reduce GHG emissions. However, the court tailored its remedy to

protect the public interest by allowing the LCFS regulations to remain operative while CARB complies with the procedural requirements it failed to satisfy.

To address the Court ruling, CARB was required to bring a new LCFS regulation to the Board for consideration in February 2015. The proposed LCFS regulation was required to contain revisions to the 2010 LCFS as well as new provisions designed to foster investments in the production of the low-carbon intensity fuels, offer additional flexibility to regulated parties, update critical technical information, simplify and streamline program operations, and enhance enforcement. On November 16, 2015 the Office of Administrative Law (OAL) approved the Final Rulemaking Package. The new LCFS regulation became effective on January 1, 2016.

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

**Executive Order B-30-15.** On April 29, 2015, Governor Edmund G. Brown Jr. issued an executive order to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. The Governor’s executive order aligns California’s GHG reduction targets with those of leading international governments ahead of the United Nations Climate Change Conference in Paris late 2015. The Order sets a new interim statewide GHG emission reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030 in order to ensure California meets its target of reducing GHG emissions to 80 percent below 1990 levels by 2050 and directs CARB to update the Climate Change Scoping Plan to express the 2030 target in terms of MMTCO<sub>2e</sub>. The Order also requires the state’s climate adaptation plan to be updated every three years, and for the State to continue its climate change research program, among other provisions. As with Executive Order S-3-05, this Order is not legally enforceable for local governments and the private sector. Legislation that would update AB 32 to make post 2020 targets and requirements a mandate is in process in the State Legislature.

## **CALIFORNIA REGULATIONS AND BUILDING CODES**

California has a long history of adopting regulations to improve energy efficiency in new and remodeled buildings. These regulations have kept California’s energy consumption relatively flat even with rapid population growth.

**Title 20 Appliance Efficiency Standards.** CCR, Title 20: Division 2, Chapter 4, Article 4, Sections 1601-1608: Appliance Efficiency Regulations regulates the sale of appliances in California. The Appliance Efficiency Regulations include standards for both federally regulated appliances and non-federally regulated appliances. 23 categories of appliances are included in the scope of these regulations. The standards within these regulations apply to appliances that are sold or

offered for sale in California, except those sold wholesale in California for final retail sale outside the state and those designed and sold exclusively for use in recreational vehicles or other mobile equipment (CEC 2012).

**Title 24 Energy Efficiency Standards and California Green Building Standards.** CCR Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The 2019 version of Title 24 was adopted by the CEC and will become effective on January 1, 2020. As a conservative measure, the analysis herein assumes compliance with the 2016 Title 24 Standards and no additional reduction for compliance with the 2019 standards have been taken.

The CEC indicates that the 2019 Title 24 standards will require solar photovoltaic systems for new homes, establish requirements for newly constructed healthcare facilities, encourage demand responsive technologies for residential buildings, update indoor and outdoor lighting for nonresidential buildings. The CEC anticipates that single-family homes built with the 2019 standards will use approximately 7 percent less energy compared to the residential homes built under the 2016 standards. Additionally, after implementation of solar photovoltaic systems, homes built under the 2019 standards will about 53 percent less energy than homes built under the 2016 standards. Nonresidential buildings will use approximately 30 percent less energy due to lighting upgrades (36).

CCR, Title 24, Part 11: California Green Building Standards Code (CALGreen) is a comprehensive and uniform regulatory code for all residential, commercial, and school buildings that went in effect on January 1, 2011, and is administered by the California Building Standards Commission (CBSC). CALGreen is updated on a regular basis, with the most recent approved update consisting of the 2019 California Green Building Code Standards that will be effective January 1, 2020. Local jurisdictions are permitted to adopt more stringent requirements, as state law provides methods for local enhancements. CALGreen recognizes that many jurisdictions have developed existing construction and demolition ordinances and defers to them as the ruling guidance provided, they establish a minimum 65 percent diversion requirement. The code also provides exemptions for areas not served by construction and demolition recycling infrastructure. The State Building Code provides the minimum standard that buildings must meet in order to be certified for occupancy, which is generally enforced by the local building official. 2019 CALGreen standards are applicable to the Project and require (37):

- Construction waste management. Recycle and/or salvage for reuse a minimum of 65 percent of the nonhazardous construction and demolition waste in accordance with Section 5.408.1.1. 5.405.1.2, or 5.408.1.3; or meet a local construction and demolition waste management ordinance, whichever is more stringent (5.408.1).
- Excavated soil and land clearing debris. 100 percent of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled. For a phase project, such material may be stockpiled on site until the storage site is developed (5.408.3).

- Recycling by Occupants. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage and collection of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics, organic waste, and metals or meet a lawfully enacted local recycling ordinance, if more restrictive (5.410.1).
- Water conserving plumbing fixtures and fittings. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the following:
  - Water Closets. The effective flush volume of all water closets shall not exceed 1.28 gallons per flush (5.303.3.1)
  - Urinals. The effective flush volume of wall-mounted urinals shall not exceed 0.125 gallons per flush (5.303.3.2.1). The effective flush volume of floor-mounted or other urinals shall not exceed 0.5 gallons per flush (5.303.3.2.2).
  - Showerheads. Single showerheads shall have a minimum flow rate of not more than 1.8 gallons per minute and 80 psi (5.303.3.3.1). When a shower is served by more than one showerhead, the combine flow rate of all showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gallons per minute at 80 psi (5.303.3.3.2).
  - Faucets and fountains. Nonresidential lavatory faucets shall have a maximum flow rate of not more than 0.5 gallons per minute at 60 psi (5.303.3.4.1). Kitchen faucets shall have a maximum flow rate of not more than 1.8 gallons per minute of 60 psi (5.303.3.4.2). Wash fountains shall have a maximum flow rate of not more than 1.8 gallons per minute (5.303.3.4.3). Metering faucets shall not deliver more than 0.20 gallons per cycle (5.303.3.4.4). Metering faucets for wash fountains shall have a maximum flow rate not more than 0.20 gallons per cycle (5.303.3.4.5).
- Outdoor portable water use in landscaped areas. Nonresidential developments shall comply with a local water efficient landscape ordinance or the current California Department of Water Resources' Model Water Efficient (MWELO), whichever is more stringent (5.304.1).
- Water meters. Separate submeters or metering devices shall be installed for new buildings or additions in excess of 50,000 square feet or for excess consumption where any tenant within a new building or within an addition that is project to consume more than 1,000 gal/day (5.303.1.1 and 5.303.1.2).
- Outdoor water use in rehabilitated landscape projects equal or greater than 2,500 square feet. Rehabilitated landscape projects with an aggregate landscape area equal to or greater than 2,500 square feet requiring a building or landscape permit (5.304.3).

Commissioning. For new buildings 10,000 square feet and over, building commissioning shall be included in the design and construction processes of the building project to verify that the building systems and components meet the owner's or owner representative's project requirements (5.410.2).

**Model Water Efficient Landscape Ordinance.** The Model Water Efficient Landscape Ordinance ("Ordinance") was required by AB 1881, the Water Conservation Act. The bill required local agencies to adopt a local landscape ordinance at least as effective in conserving water as the Model Ordinance by January 1, 2010. Reductions in water use of 20 percent consistent with (SBX-7-7) 2020 mandate are expected upon compliance with the ordinance. Governor Brown's Drought Executive Order of April 1, 2015 (EO B-29-15) directed Department of Water Resources (DWR) to update the Ordinance through expedited regulation. The California Water Commission

approved the revised Ordinance on July 15, 2015 effective December 15, 2015. New development projects that include landscape areas of 500 sf or more are subject to the Ordinance. The update requires:

- More efficient irrigation systems;
- Incentives for graywater usage;
- Improvements in on-site stormwater capture;
- Limiting the portion of landscapes that can be planted with high water use plants; and
- Reporting requirements for local agencies.

**CARB Refrigerant Management Program.** CARB adopted a regulation in 2009 to reduce refrigerant GHG emissions from stationary sources through refrigerant leak detection and monitoring, leak repair, system retirement and retrofitting, reporting and recordkeeping, and proper refrigerant cylinder use, sale, and disposal. The regulation is set forth in sections 95380 to 95398 of Title 17, CCR. The rules implementing the regulation establish a limit on statewide GHG emissions from stationary facilities with refrigeration systems with more than 50 pounds of a high GWP refrigerant. The refrigerant management program is designed to (1) reduce emissions of high-GWP GHG refrigerants from leaky stationary, non-residential refrigeration equipment; (2) reduce emissions from the installation and servicing of refrigeration and air-conditioning appliances using high-GWP refrigerants; and (3) verify GHG emission reductions.

**Tractor-Trailer GHG Regulation.** The tractors and trailers subject to this regulation must either use EPA SmartWay certified tractors and trailers or retrofit their existing fleet with SmartWay verified technologies. The regulation applies primarily to owners of 53-foot or longer box-type trailers, including both dry-van and refrigerated-van trailers, and owners of the HD tractors that pull them on California highways. These owners are responsible for replacing or retrofitting their affected vehicles with compliant aerodynamic technologies and low rolling resistance tires. Sleeper cab tractors model year 2011 and later must be SmartWay certified. All other tractors must use SmartWay verified low rolling resistance tires. There are also requirements for trailers to have low rolling resistance tires and aerodynamic devices.

**Phase I and 2 Heavy-Duty Vehicle GHG Standards.** CARB has adopted a new regulation for GHG emissions from HD trucks and engines sold in California. It establishes GHG emission limits on truck and engine manufacturers and harmonizes with the EPA rule for new trucks and engines nationally. Existing HD vehicle regulations in California include engine criteria emission standards, tractor-trailer GHG requirements to implement SmartWay strategies (i.e., the Heavy-Duty Tractor-Trailer Greenhouse Gas Regulation), and in-use fleet retrofit requirements such as the Truck and Bus Regulation. In September 2011, the EPA adopted their new rule for HD trucks and engines. The EPA rule has compliance requirements for new compression and spark ignition engines, as well as trucks from Class 2b through Class 8. Compliance requirements begin with model year (MY) 2014 with stringency levels increasing through MY 2018. The rule organizes truck compliance into three groupings, which include a) HD pickups and vans; b) vocational vehicles; and c) combination tractors. The EPA rule does not regulate trailers.

CARB staff has worked jointly with the EPA and the NHTSA on the next phase of federal GHG emission standards for MD and HD vehicles, called federal Phase 2. The federal Phase 2 standards were built on the improvements in engine and vehicle efficiency required by the Phase 1 emission standards and represent a significant opportunity to achieve further GHG reductions for 2018 and later model year HD vehicles, including trailers. But as discussed above, the EPA and NHTSA have proposed to roll back GHG and fuel economy standards for cars and light-duty trucks, which suggests a similar rollback of Phase 2 standards for MD and HD vehicles may be pursued.

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

On December 28, 2018, the Natural Resources Agency announced the OAL approved the amendments to the CEQA Guidelines for implementing the CEQA. The CEQA Amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in CEQA documents. The CEQA Amendments fit within the existing CEQA framework by amending existing CEQA Guidelines to reference climate change.

Section 1506.4 was amended to state that in determining the significance of a project’s GHG emissions, the lead agency should focus its analysis on the reasonably foreseeable incremental contribution of the project’s emissions to the effects of climate change. A project’s incremental contribution may be cumulatively considerable even if it appears relatively small compared to statewide, national or global emissions. The agency’s analysis should consider a timeframe that is appropriate for the project. The agency’s analysis also must reasonably reflect evolving scientific knowledge and state regulatory schemes. Additionally, a lead agency may use a model or methodology to estimate GHG emissions resulting from a project. The lead agency has discretion to select the model or methodology it considers most appropriate to enable decision makers to intelligently take into account the project’s incremental contribution to climate change. The lead agency must support its selection of a model or methodology with substantial evidence. The lead agency should explain the limitations of the particular model or methodology selected for use (38).

## **REGIONAL**

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

## **South Coast Air Quality Management District**

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

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

- Tier 1 consists of evaluating whether or not the project qualifies for any applicable exemption under CEQA.
- Tier 2 consists of determining whether the project is consistent with a GHG reduction plan. If a project is consistent with a qualifying local GHG reduction plan, it does not have significant GHG emissions.
- Tier 3 consists of screening values, which the lead agency can choose, but must be consistent with all projects within its jurisdiction. A project's construction emissions are averaged over 30 years and are added to the project's operational emissions. If a project's emissions are below one of the following screening thresholds, then the project is less than significant:
  - Residential and Commercial land use: 3,000 MTCO<sub>2</sub>e per year
  - Industrial land use: 10,000 MTCO<sub>2</sub>e per year
  - Based on land use type: residential: 3,500 MTCO<sub>2</sub>e per year; commercial: 1,400 MTCO<sub>2</sub>e per year; or mixed use: 3,000 MTCO<sub>2</sub>e per year
- Tier 4 has the following options:
  - Option 1: Reduce BAU emissions by a certain percentage; this percentage is currently undefined.
  - Option 2: Early implementation of applicable AB 32 Scoping Plan measures
  - Option 3, 2020 target for service populations (SP), which includes residents and employees: 4.8 MTCO<sub>2</sub>e/SP/year for projects and 6.6 MTCO<sub>2</sub>e/SP/year for plans;
  - Option 3, 2035 target: 3.0 MTCO<sub>2</sub>e/SP/year for projects and 4.1 MTCO<sub>2</sub>e/SP/year for plans
- Tier 5 involves mitigation offsets to achieve target significance threshold.

The SCAQMD's interim thresholds used the Executive Order S-3-05-year 2050 goal as the basis for the Tier 3 screening level. Achieving the Executive Order's objective would contribute to

worldwide efforts to cap carbon dioxide concentrations at 450 ppm, thus stabilizing global climate.

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

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

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



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### **3 PROJECT GREENHOUSE GAS IMPACT**

#### **3.1 INTRODUCTION**

The Project has been evaluated to determine if it will result in a significant GHG impact. The significance of these potential impacts is described in the following section.

#### **3.2 STANDARDS OF SIGNIFICANCE**

The criteria used to determine the significance of potential Project-related GHG impacts are taken from the Initial Study Checklist in Appendix G of the State CEQA Guidelines (14 California Code of Regulations §§15000, et seq.). Based on these thresholds, a project would result in a significant impact related to GHG if it would (1):

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

#### **3.3 CALIFORNIA EMISSIONS ESTIMATOR MODEL™ EMPLOYED TO ANALYZE GHG EMISSIONS**

On October 17, 2017, the SCAQMD, in conjunction with the California Air Pollution Control Officers Association (CAPCOA) and other California air districts, released the latest version of the California Emissions Estimator Model™ (CalEEMod) v2016.3.2. The purpose of this model is to calculate construction-source and operational-source criteria pollutant (VOCs, NO<sub>x</sub>, SO<sub>x</sub>, CO, PM<sub>10</sub>, and PM<sub>2.5</sub>) and GHG emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from mitigation measures (39). Accordingly, the latest version of CalEEMod™ has been used for this Project to determine GHG emissions. Output from the model runs for construction activity is provided in Appendix 3.1.

#### **3.4 CONSTRUCTION LIFE-CYCLE ANALYSIS NOT REQUIRED**

A full life-cycle analysis (LCA) for construction activity is not included in this analysis due to the lack of consensus guidance on LCA methodology at this time (40). Life-cycle analysis (i.e., assessing economy-wide GHG emissions from the processes in manufacturing and transporting all raw materials used in the project development, and infrastructure) depends on emission factors or econometric factors that are not well established for all processes. At this time, an LCA would be extremely speculative and thus has not been prepared.

Additionally, the SCAQMD recommends analyzing direct and indirect project GHG emissions generated within California and not life-cycle emissions because the life-cycle effects from a project could occur outside of California, might not be very well understood or documented, and would be challenging to mitigate (41). Additionally, the science to calculate life cycle emissions is not yet established or well defined; therefore, SCAQMD has not recommended, and is not requiring, life-cycle emissions analysis.

### 3.5 CONSTRUCTION EMISSIONS

Construction activities associated with the Project would result in emissions of CO<sub>2</sub> and CH<sub>4</sub> from construction activities. The report *Crestline Sanitation Huston Creek Wastewater Treatment Plant (WWTP) Dewatering Building and Primary Clarifier Project Air Quality Impact Analysis Report* (AQIA) (Urban Crossroads, Inc., 2019) contains detailed information regarding construction activity (42).

### 3.6 OPERATIONAL EMISSIONS

In terms of operational GHG emissions, the proposed Project involves the construction new upgrade the existing wastewater treatment plant with the addition of a primary clarifier, backup generator, trickling filter recirculation pumps, and a sludge dewatering building. The proposed Project does not include any substantive new stationary or mobile sources of emissions, and therefore, by its very nature, will generate little GHG emissions from Project operations (as shown in Table 3-1). While it is anticipated that the Project would require intermittent maintenance to be, such maintenance would be minimal requiring a negligible amount of traffic trips on an annual basis. Therefore, there is no significant operational impact. Detailed model outputs are presented in Appendix 3.1.

**TABLE 3-1: GHG EMISSIONS FROM BACKUP DIESEL GENERATOR**

Emission Source	Emissions (metric tons per year)			
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Total CO <sub>2</sub> E
Emissions from Backup Generator	6.09	8.50e-004	0.00	6.11
<b>Total CO<sub>2</sub>E (All Sources)</b>	<b>6.11</b>			

Source: CalEEMod model output, See Appendix 3.1 for detailed model outputs.

### 3.7 EMISSIONS SUMMARY

As shown in Table 3-2, the Project will result in approximately 1,989.10 MTCO<sub>2</sub>e per year from construction activities. Detailed model outputs are presented in Appendix 3.2.

**TABLE 3-2: PROJECT CONSTRUCTION GHG EMISSIONS**

Emission Source	Emissions (metric tons per year)			
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Total CO <sub>2</sub> E
Annual construction-related emissions	1,978.44	0.43	0.00	1,989.10
<b>Total CO<sub>2</sub>E (All Sources)</b>	<b>1,989.10</b>			

Source: CalEEMod model output, See Appendix 3.2 for detailed model outputs.

### 3.8 GREENHOUSE GAS EMISSIONS FINDINGS AND RECOMMENDATIONS

***GHG Impact #1: The Project would generate direct or indirect GHG emission that would result in a significant impact on the environment.***

The County of San Bernardino adopted the GHG Plan in September 2011, which provides guidance on how to analyze GHG emissions and determine significance during the CEQA review of proposed development projects within the County (43).

The County includes a GHG Development Review Process (DRP) that specifies a two-step approach in quantifying GHG emissions (44). First, a screening threshold of 3,000 MT CO<sub>2</sub>e per year is used to determine if additional analysis is required. Projects that exceed the 3,000 MTCO<sub>2</sub>e per year will be required to either achieve a minimum 100 points per the Screening Tables or a 31% reduction over 2007 emissions levels. Consistent with CEQA guidelines, such projects would be determined to have a less than significant individual and cumulative impact for GHG emissions.

As shown in Table 3-2, the Project will result in approximately 1,989.10 MTCO<sub>2</sub>e per year; the proposed project would not exceed the screening threshold of 3,000 MTCO<sub>2</sub>e per year. As such, the Project would result in a less than significant impact and no further analysis is required consistent with the County's DRP methodology.

***GHG Impact #2: The Project would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHG.***

As discussed above, the Project involves construction activity and does not propose a trip-generating land use or facilities that would generate any substantive amount of on-going GHG emissions. As presented in Table 3-2, the project's short-term GHG emissions are below the 3,000 MTCO<sub>2</sub> per year screening threshold. As concluded in Impact Statement GHG-1 the proposed Project would not generate a significant amount of GHGs emissions. The proposed Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Impacts are less than significant in this regard.

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## **5 CERTIFICATIONS**

The contents of this greenhouse gas study report represent an accurate depiction of the GHG impacts associated with the proposed Crestline Sanitation Huston Creek Wastewater Treatment Plant (WWTP) Dewatering Building and Primary Clarifier Project. The information contained in this GHG report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 336-5987.

Haseeb Qureshi  
Associate Principal  
URBAN CROSSROADS, INC.  
260 E. Baker Street, Suite 200  
Costa Mesa, CA 92626  
(949) 336-5987  
[hqureshi@urbanxroads.com](mailto:hqureshi@urbanxroads.com)

### **EDUCATION**

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

Bachelor of Arts in Environmental Analysis and Design  
University of California, Irvine • June, 2006

### **PROFESSIONAL AFFILIATIONS**

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

### **PROFESSIONAL CERTIFICATIONS**

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

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## **APPENDIX 3.1:**

### **CALEEMOD DAILY BACKUP EMISSIONS MODEL OUTPUTS**

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## Crestline Sanitation - San Bernardino-South Coast County, Annual

## Crestline Sanitation

### San Bernardino-South Coast County, Annual

## 1.0 Project Characteristics

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### 1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	0.00	1000sqft	0.00	0.00	0

### 1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	10			Operational Year	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase -

Off-road Equipment - Operations Only

Trips and VMT - Operations Only

On-road Fugitive Dust - Operations Only

Architectural Coating - Operations Only

Stationary Sources - Emergency Generators and Fire Pumps -

## Crestline Sanitation - San Bernardino-South Coast County, Annual

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	100.00	0.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	0.00
tblArchitecturalCoating	EF_Parking	100.00	0.00
tblArchitecturalCoating	EF_Residential_Exterior	50.00	0.00
tblArchitecturalCoating	EF_Residential_Interior	50.00	0.00
tblOffRoadEquipment	HorsePower	78.00	0.00
tblOffRoadEquipment	LoadFactor	0.48	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOnRoadDust	AverageVehicleWeight	2.40	0.00
tblOnRoadDust	HaulingPercentPave	100.00	0.00
tblOnRoadDust	MaterialMoistureContent	0.50	0.00
tblOnRoadDust	MaterialSiltContent	8.50	0.00
tblOnRoadDust	MeanVehicleSpeed	40.00	0.00
tblOnRoadDust	RoadSiltLoading	0.10	0.00
tblOnRoadDust	VendorPercentPave	100.00	0.00
tblOnRoadDust	WorkerPercentPave	100.00	0.00
tblStationaryGeneratorsPumpsEF	CH4_EF	0.07	0.07
tblStationaryGeneratorsPumpsEF	ROG_EF	2.2480e-003	2.2477e-003
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	80.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	0.55
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	200.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	0.00
tblTripsAndVMT	VendorTripLength	6.90	0.00
tblTripsAndVMT	WorkerTripLength	14.70	0.00

## Crestline Sanitation - San Bernardino-South Coast County, Annual

**2.0 Emissions Summary**

	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
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

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

**2.2 Overall Operational****Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	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
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	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
Stationary	0.0131	0.0428	0.0476	6.0000e-005		1.9300e-003	1.9300e-003		1.9300e-003	1.9300e-003	0.0000	6.0928	6.0928	8.5000e-004	0.0000	6.1141
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0131</b>	<b>0.0428</b>	<b>0.0476</b>	<b>6.0000e-005</b>	<b>0.0000</b>	<b>1.9300e-003</b>	<b>1.9300e-003</b>	<b>0.0000</b>	<b>1.9300e-003</b>	<b>1.9300e-003</b>	<b>0.0000</b>	<b>6.0928</b>	<b>6.0928</b>	<b>8.5000e-004</b>	<b>0.0000</b>	<b>6.1141</b>

## Crestline Sanitation - San Bernardino-South Coast County, Annual

**2.2 Overall Operational****Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	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
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	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
Stationary	0.0131	0.0428	0.0476	6.0000e-005		1.9300e-003	1.9300e-003		1.9300e-003	1.9300e-003	0.0000	6.0928	6.0928	8.5000e-004	0.0000	6.1141
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0131</b>	<b>0.0428</b>	<b>0.0476</b>	<b>6.0000e-005</b>	<b>0.0000</b>	<b>1.9300e-003</b>	<b>1.9300e-003</b>	<b>0.0000</b>	<b>1.9300e-003</b>	<b>1.9300e-003</b>	<b>0.0000</b>	<b>6.0928</b>	<b>6.0928</b>	<b>8.5000e-004</b>	<b>0.0000</b>	<b>6.1141</b>

	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
<b>Percent Reduction</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

**3.0 Construction Detail****Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Architectural Coating	Architectural Coating	1/1/2020	12/31/2019	5	0	



## Crestline Sanitation - San Bernardino-South Coast County, Annual

**Acres of Grading (Site Preparation Phase): 0****Acres of Grading (Grading Phase): 0****Acres of Paving: 0****Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)****OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	0	0.00	0	0.00

**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
Architectural Coating	0	0.00	0.00	0.00	0.00	0.00	0.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction****4.0 Operational Detail - Mobile**

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**4.1 Mitigation Measures Mobile**

## Crestline Sanitation - San Bernardino-South Coast County, Annual

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

## 4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

## 4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	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
General Office Building	16.60	8.40	6.90	33.00	48.00	19.00	77	19	4

## 4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Office Building	0.553113	0.036408	0.180286	0.116335	0.016165	0.005101	0.018218	0.063797	0.001357	0.001565	0.005903	0.000808	0.000944

## 5.0 Energy Detail

---

Historical Energy Use: N

## Crestline Sanitation - San Bernardino-South Coast County, Annual

## 5.1 Mitigation Measures Energy

[illegible]

## 5.2 Energy by Land Use - NaturalGas

### Unmitigated

[illegible]

## Crestline Sanitation - San Bernardino-South Coast County, Annual

**5.2 Energy by Land Use - NaturalGas****Mitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Office Building	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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**5.3 Energy by Land Use - Electricity****Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Office Building	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

## Crestline Sanitation - San Bernardino-South Coast County, Annual

### 5.3 Energy by Land Use - Electricity

**Mitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Office Building	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

## 6.0 Area Detail

## 6.1 Mitigation Measures Area

[illegible]

## Crestline Sanitation - San Bernardino-South Coast County, Annual

**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	0.0000					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
<b>Total</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**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	0.0000					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
<b>Total</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**7.0 Water Detail**

## Crestline Sanitation - San Bernardino-South Coast County, Annual

**7.1 Mitigation Measures Water**

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

**7.2 Water by Land Use****Unmitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	0 / 0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

## Crestline Sanitation - San Bernardino-South Coast County, Annual

**7.2 Water by Land Use****Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	0 / 0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**8.0 Waste Detail****8.1 Mitigation Measures Waste****Category/Year**

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000



## Crestline Sanitation - San Bernardino-South Coast County, Annual

**8.2 Waste by Land Use****Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**9.0 Operational Offroad**

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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## Crestline Sanitation - San Bernardino-South Coast County, Annual

**10.0 Stationary Equipment****Fire Pumps and Emergency Generators**

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0.55	200	80	0.73	Diesel

**Boilers**

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

**User Defined Equipment**

Equipment Type	Number
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**10.1 Stationary Sources****Unmitigated/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
Equipment Type	tons/yr										MT/yr					
Emergency Generator - Diesel (75 - 100 HP)	0.0131	0.0428	0.0476	6.0000e-005		1.9300e-003	1.9300e-003		1.9300e-003	1.9300e-003	0.0000	6.0928	6.0928	8.5000e-004	0.0000	6.1141
<b>Total</b>	<b>0.0131</b>	<b>0.0428</b>	<b>0.0476</b>	<b>6.0000e-005</b>		<b>1.9300e-003</b>	<b>1.9300e-003</b>		<b>1.9300e-003</b>	<b>1.9300e-003</b>	<b>0.0000</b>	<b>6.0928</b>	<b>6.0928</b>	<b>8.5000e-004</b>	<b>0.0000</b>	<b>6.1141</b>

**11.0 Vegetation**

## **APPENDIX 3.2:**

### **CALEEMOD ANNUAL CONSTRUCTION EMISSIONS MODEL OUTPUTS**

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## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**Crestline Sanitation (Construction - Unmitigated)**  
**San Bernardino-South Coast County, Annual****1.0 Project Characteristics**

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**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	4.38	1000sqft	0.10	4,383.00	0

**1.2 Other Project Characteristics**

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	10			Operational Year	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MW hr)	702.44	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

**1.3 User Entered Comments & Non-Default Data**

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

Project Characteristics -

Land Use -

Construction Phase - Per the Project Description, Construction is expected to begin in 2020 and last approximately 24 months.

Off-road Equipment - Construction Equipment adjusted as per information provided in the Project Description.

Grading - Total acres graded based on the assumption that the use of Tractors/Loader/Backhoe equipment (2) would disturb up to 1 acre per day.

Vehicle Trips - Construction Run Only.

Energy Use - Construction Run Only.

Water And Wastewater - Construction Run Only.

Solid Waste - Construction Run Only.

Construction Off-road Equipment Mitigation - Rule 403

Trips and VMT - As per information provided by the Project applicant, it is estimated that 205 truckloads (one-way) or 410 truckloads (two-way) will be required to removal excavated material.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	2.00	540.00
tblConstructionPhase	PhaseEndDate	3/3/2020	3/25/2022
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24NG	15.36	0.00
tblGrading	AcresOfGrading	0.00	1.00
tblGrading	MaterialExported	0.00	2,050.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblSolidWaste	LandfillCaptureGasFlare	94.00	0.00
tblSolidWaste	LandfillNoGasCapture	6.00	0.00

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

tblSolidWaste	SolidWasteGenerationRate	5.43	0.00
tblTripsAndVMT	HaulingTripNumber	256.00	410.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TTP	28.00	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TTP	13.00	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TTP	59.00	0.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	0.00
tblVehicleTrips	ST_TR	1.32	0.00
tblVehicleTrips	SU_TR	0.68	0.00
tblVehicleTrips	WD_TR	6.97	0.00
tblWater	IndoorWaterUseRate	1,012,875.00	0.00

## 2.0 Emissions Summary

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## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**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	0.5982	5.2130	4.7163	9.3700e-003	0.0793	0.2556	0.3349	0.0209	0.2424	0.2634	0.0000	803.8904	803.8904	0.1738	0.0000	808.2346
2021	0.6565	5.5913	5.5285	0.0111	0.0939	0.2662	0.3601	0.0248	0.2527	0.2775	0.0000	955.5097	955.5097	0.2057	0.0000	960.6518
2022	0.1382	1.1316	1.2498	2.5500e-003	0.0241	0.0525	0.0766	6.2600e-003	0.0499	0.0562	0.0000	219.0432	219.0432	0.0471	0.0000	220.2197
Maximum	0.6565	5.5913	5.5285	0.0111	0.0939	0.2662	0.3601	0.0248	0.2527	0.2775	0.0000	955.5097	955.5097	0.2057	0.0000	960.6518

**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	0.5982	5.2130	4.7163	9.3700e-003	0.0789	0.2556	0.3345	0.0209	0.2424	0.2633	0.0000	803.8895	803.8895	0.1738	0.0000	808.2338
2021	0.6565	5.5913	5.5285	0.0111	0.0935	0.2662	0.3597	0.0248	0.2527	0.2775	0.0000	955.5086	955.5086	0.2057	0.0000	960.6508
2022	0.1382	1.1316	1.2498	2.5500e-003	0.0237	0.0525	0.0762	6.2200e-003	0.0499	0.0561	0.0000	219.0429	219.0429	0.0471	0.0000	220.2194
Maximum	0.6565	5.5913	5.5285	0.0111	0.0935	0.2662	0.3597	0.0248	0.2527	0.2775	0.0000	955.5086	955.5086	0.2057	0.0000	960.6508



## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

	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
Percent Reduction	0.00	0.00	0.00	0.00	0.60	0.00	0.15	0.23	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	3-2-2020	6-1-2020	1.7440	1.7440
2	6-2-2020	9-1-2020	1.7439	1.7439
3	9-2-2020	12-1-2020	1.7252	1.7252
4	12-2-2020	3-1-2021	1.5951	1.5951
5	3-2-2021	6-1-2021	1.5733	1.5733
6	6-2-2021	9-1-2021	1.5732	1.5732
7	9-2-2021	12-1-2021	1.5564	1.5564
8	12-2-2021	3-1-2022	1.4204	1.4204
9	3-2-2022	6-1-2022	0.3629	0.3629
		Highest	1.7440	1.7440

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**2.2 Overall Operational****Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0179	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1000e-004	1.1000e-004	0.0000	0.0000	1.2000e-004
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	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
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0179</b>	<b>0.0000</b>	<b>6.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.1000e-004</b>	<b>1.1000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.2000e-004</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**2.2 Overall Operational****Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0179	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1000e-004	1.1000e-004	0.0000	0.0000	1.2000e-004
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	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
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0179</b>	<b>0.0000</b>	<b>6.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.1000e-004</b>	<b>1.1000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.2000e-004</b>

	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
<b>Percent Reduction</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

**3.0 Construction Detail****Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	3/2/2020	3/25/2022	5	540	

**Acres of Grading (Site Preparation Phase): 0**

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**Acres of Grading (Grading Phase): 1****Acres of Paving: 0****Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)****OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Cement and Mortar Mixers	3	8.00	9	0.56
Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Grading	Cranes	1	8.00	231	0.29
Grading	Dumpers/Tenders	10	8.00	16	0.38
Grading	Excavators	2	8.00	158	0.38
Grading	Generator Sets	1	8.00	84	0.74
Grading	Off-Highway Trucks	1	8.00	402	0.38
Grading	Other Construction Equipment	1	8.00	172	0.42
Grading	Pavers	1	8.00	130	0.42
Grading	Pumps	2	8.00	84	0.74
Grading	Rollers	1	8.00	80	0.38
Grading	Rubber Tired Dozers	0	1.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37

**Trips and VMT**

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	25	63.00	0.00	410.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

Water Exposed Area

**3.2 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					6.5000e-004	0.0000	6.5000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.5636	5.1653	4.4455	8.5800e-003		0.2550	0.2550		0.2419	0.2419	0.0000	732.8452	732.8452	0.1715	0.0000	737.1320
<b>Total</b>	<b>0.5636</b>	<b>5.1653</b>	<b>4.4455</b>	<b>8.5800e-003</b>	<b>6.5000e-004</b>	<b>0.2550</b>	<b>0.2557</b>	<b>7.0000e-005</b>	<b>0.2419</b>	<b>0.2420</b>	<b>0.0000</b>	<b>732.8452</b>	<b>732.8452</b>	<b>0.1715</b>	<b>0.0000</b>	<b>737.1320</b>

**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	5.3000e-004	0.0210	3.2100e-003	6.0000e-005	3.0100e-003	6.0000e-005	3.0700e-003	7.8000e-004	6.0000e-005	8.4000e-004	0.0000	6.2117	6.2117	3.5000e-004	0.0000	6.2205
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0341	0.0268	0.2676	7.2000e-004	0.0756	5.1000e-004	0.0761	0.0201	4.7000e-004	0.0206	0.0000	64.8335	64.8335	1.9500e-003	0.0000	64.8822
<b>Total</b>	<b>0.0346</b>	<b>0.0478</b>	<b>0.2708</b>	<b>7.8000e-004</b>	<b>0.0787</b>	<b>5.7000e-004</b>	<b>0.0792</b>	<b>0.0209</b>	<b>5.3000e-004</b>	<b>0.0214</b>	<b>0.0000</b>	<b>71.0452</b>	<b>71.0452</b>	<b>2.3000e-003</b>	<b>0.0000</b>	<b>71.1027</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**3.2 Grading - 2020****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					2.5000e-004	0.0000	2.5000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.5635	5.1652	4.4455	8.5800e-003		0.2550	0.2550		0.2419	0.2419	0.0000	732.8443	732.8443	0.1715	0.0000	737.1311
<b>Total</b>	<b>0.5635</b>	<b>5.1652</b>	<b>4.4455</b>	<b>8.5800e-003</b>	<b>2.5000e-004</b>	<b>0.2550</b>	<b>0.2553</b>	<b>3.0000e-005</b>	<b>0.2419</b>	<b>0.2419</b>	<b>0.0000</b>	<b>732.8443</b>	<b>732.8443</b>	<b>0.1715</b>	<b>0.0000</b>	<b>737.1311</b>

**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	5.3000e-004	0.0210	3.2100e-003	6.0000e-005	3.0100e-003	6.0000e-005	3.0700e-003	7.8000e-004	6.0000e-005	8.4000e-004	0.0000	6.2117	6.2117	3.5000e-004	0.0000	6.2205
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0341	0.0268	0.2676	7.2000e-004	0.0756	5.1000e-004	0.0761	0.0201	4.7000e-004	0.0206	0.0000	64.8335	64.8335	1.9500e-003	0.0000	64.8822
<b>Total</b>	<b>0.0346</b>	<b>0.0478</b>	<b>0.2708</b>	<b>7.8000e-004</b>	<b>0.0787</b>	<b>5.7000e-004</b>	<b>0.0792</b>	<b>0.0209</b>	<b>5.3000e-004</b>	<b>0.0214</b>	<b>0.0000</b>	<b>71.0452</b>	<b>71.0452</b>	<b>2.3000e-003</b>	<b>0.0000</b>	<b>71.1027</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**3.2 Grading - 2021****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					6.5000e-004	0.0000	6.5000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.6181	5.5395	5.2319	0.0102		0.2656	0.2656		0.2521	0.2521	0.0000	873.3665	873.3665	0.2032	0.0000	878.4460
<b>Total</b>	<b>0.6181</b>	<b>5.5395</b>	<b>5.2319</b>	<b>0.0102</b>	<b>6.5000e-004</b>	<b>0.2656</b>	<b>0.2662</b>	<b>7.0000e-005</b>	<b>0.2521</b>	<b>0.2522</b>	<b>0.0000</b>	<b>873.3665</b>	<b>873.3665</b>	<b>0.2032</b>	<b>0.0000</b>	<b>878.4460</b>

**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	6.0000e-004	0.0231	3.7200e-003	8.0000e-005	3.0700e-003	6.0000e-005	3.1400e-003	8.0000e-004	6.0000e-005	8.7000e-004	0.0000	7.3357	7.3357	4.1000e-004	0.0000	7.3461
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0378	0.0286	0.2929	8.3000e-004	0.0902	5.9000e-004	0.0907	0.0239	5.4000e-004	0.0245	0.0000	74.8075	74.8075	2.0900e-003	0.0000	74.8598
<b>Total</b>	<b>0.0384</b>	<b>0.0518</b>	<b>0.2967</b>	<b>9.1000e-004</b>	<b>0.0932</b>	<b>6.5000e-004</b>	<b>0.0939</b>	<b>0.0247</b>	<b>6.0000e-004</b>	<b>0.0254</b>	<b>0.0000</b>	<b>82.1432</b>	<b>82.1432</b>	<b>2.5000e-003</b>	<b>0.0000</b>	<b>82.2059</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**3.2 Grading - 2021****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					2.5000e-004	0.0000	2.5000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.6181	5.5395	5.2319	0.0102		0.2656	0.2656		0.2521	0.2521	0.0000	873.3654	873.3654	0.2032	0.0000	878.4449
<b>Total</b>	<b>0.6181</b>	<b>5.5395</b>	<b>5.2319</b>	<b>0.0102</b>	<b>2.5000e-004</b>	<b>0.2656</b>	<b>0.2658</b>	<b>3.0000e-005</b>	<b>0.2521</b>	<b>0.2521</b>	<b>0.0000</b>	<b>873.3654</b>	<b>873.3654</b>	<b>0.2032</b>	<b>0.0000</b>	<b>878.4449</b>

**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	6.0000e-004	0.0231	3.7200e-003	8.0000e-005	3.0700e-003	6.0000e-005	3.1400e-003	8.0000e-004	6.0000e-005	8.7000e-004	0.0000	7.3357	7.3357	4.1000e-004	0.0000	7.3461
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0378	0.0286	0.2929	8.3000e-004	0.0902	5.9000e-004	0.0907	0.0239	5.4000e-004	0.0245	0.0000	74.8075	74.8075	2.0900e-003	0.0000	74.8598
<b>Total</b>	<b>0.0384</b>	<b>0.0518</b>	<b>0.2967</b>	<b>9.1000e-004</b>	<b>0.0932</b>	<b>6.5000e-004</b>	<b>0.0939</b>	<b>0.0247</b>	<b>6.0000e-004</b>	<b>0.0254</b>	<b>0.0000</b>	<b>82.1432</b>	<b>82.1432</b>	<b>2.5000e-003</b>	<b>0.0000</b>	<b>82.2059</b>



## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**3.2 Grading - 2022****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.5000e-004	0.0000	6.5000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1299	1.1208	1.1873	2.3500e-003		0.0524	0.0524		0.0498	0.0498	0.0000	200.7983	200.7983	0.0465	0.0000	201.9617
<b>Total</b>	<b>0.1299</b>	<b>1.1208</b>	<b>1.1873</b>	<b>2.3500e-003</b>	<b>6.5000e-004</b>	<b>0.0524</b>	<b>0.0530</b>	<b>7.0000e-005</b>	<b>0.0498</b>	<b>0.0499</b>	<b>0.0000</b>	<b>200.7983</b>	<b>200.7983</b>	<b>0.0465</b>	<b>0.0000</b>	<b>201.9617</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3000e-004	4.8700e-003	8.3000e-004	2.0000e-005	2.7500e-003	1.0000e-005	2.7600e-003	6.9000e-004	1.0000e-005	7.0000e-004	0.0000	1.6674	1.6674	9.0000e-005	0.0000	1.6698
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.1300e-003	5.9100e-003	0.0618	1.8000e-004	0.0207	1.3000e-004	0.0209	5.5000e-003	1.2000e-004	5.6200e-003	0.0000	16.5775	16.5775	4.3000e-004	0.0000	16.5883
<b>Total</b>	<b>8.2600e-003</b>	<b>0.0108</b>	<b>0.0626</b>	<b>2.0000e-004</b>	<b>0.0235</b>	<b>1.4000e-004</b>	<b>0.0236</b>	<b>6.1900e-003</b>	<b>1.3000e-004</b>	<b>6.3200e-003</b>	<b>0.0000</b>	<b>18.2449</b>	<b>18.2449</b>	<b>5.2000e-004</b>	<b>0.0000</b>	<b>18.2580</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**3.2 Grading - 2022****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					2.5000e-004	0.0000	2.5000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1299	1.1208	1.1873	2.3500e-003		0.0524	0.0524		0.0498	0.0498	0.0000	200.7980	200.7980	0.0465	0.0000	201.9614
<b>Total</b>	<b>0.1299</b>	<b>1.1208</b>	<b>1.1873</b>	<b>2.3500e-003</b>	<b>2.5000e-004</b>	<b>0.0524</b>	<b>0.0526</b>	<b>3.0000e-005</b>	<b>0.0498</b>	<b>0.0498</b>	<b>0.0000</b>	<b>200.7980</b>	<b>200.7980</b>	<b>0.0465</b>	<b>0.0000</b>	<b>201.9614</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3000e-004	4.8700e-003	8.3000e-004	2.0000e-005	2.7500e-003	1.0000e-005	2.7600e-003	6.9000e-004	1.0000e-005	7.0000e-004	0.0000	1.6674	1.6674	9.0000e-005	0.0000	1.6698
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.1300e-003	5.9100e-003	0.0618	1.8000e-004	0.0207	1.3000e-004	0.0209	5.5000e-003	1.2000e-004	5.6200e-003	0.0000	16.5775	16.5775	4.3000e-004	0.0000	16.5883
<b>Total</b>	<b>8.2600e-003</b>	<b>0.0108</b>	<b>0.0626</b>	<b>2.0000e-004</b>	<b>0.0235</b>	<b>1.4000e-004</b>	<b>0.0236</b>	<b>6.1900e-003</b>	<b>1.3000e-004</b>	<b>6.3200e-003</b>	<b>0.0000</b>	<b>18.2449</b>	<b>18.2449</b>	<b>5.2000e-004</b>	<b>0.0000</b>	<b>18.2580</b>

**4.0 Operational Detail - Mobile**

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**4.1 Mitigation Measures Mobile**

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

**4.2 Trip Summary Information**

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

**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
General Light Industry	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

**4.4 Fleet Mix**

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.553113	0.036408	0.180286	0.116335	0.016165	0.005101	0.018218	0.063797	0.001357	0.001565	0.005903	0.000808	0.000944

Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

## 5.0 Energy Detail

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

[illegible]

Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

## 5.2 Energy by Land Use - NaturalGas

### Unmitigated

[illegible]

**Mitigated**

[illegible]

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**5.3 Energy by Land Use - Electricity****Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**6.0 Area Detail****6.1 Mitigation Measures Area**

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0179	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1000e-004	1.1000e-004	0.0000	0.0000	1.2000e-004
Unmitigated	0.0179	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1000e-004	1.1000e-004	0.0000	0.0000	1.2000e-004

## 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	2.0300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0158					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1000e-004	1.1000e-004	0.0000	0.0000	1.2000e-004
<b>Total</b>	<b>0.0179</b>	<b>0.0000</b>	<b>6.0000e-005</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.1000e-004</b>	<b>1.1000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.2000e-004</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**6.2 Area by SubCategory****Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.0300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0158					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1000e-004	1.1000e-004	0.0000	0.0000	1.2000e-004
<b>Total</b>	<b>0.0179</b>	<b>0.0000</b>	<b>6.0000e-005</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.1000e-004</b>	<b>1.1000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.2000e-004</b>

**7.0 Water Detail****7.1 Mitigation Measures Water**



## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

**7.2 Water by Land Use****Unmitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**7.2 Water by Land Use****Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**8.0 Waste Detail**

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**8.1 Mitigation Measures Waste****Category/Year**

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

**8.2 Waste by Land Use****Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**9.0 Operational Offroad**

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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## Crestline Sanitation (Construction - Unmitigated) - San Bernardino-South Coast County, Annual

## 10.0 Stationary Equipment

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### Fire Pumps and Emergency Generators

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

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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### User Defined Equipment

Equipment Type	Number
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## 11.0 Vegetation

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