Initial Study/Mitigated Negative Declaration
Appendices

Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System Project

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

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APPENDIX A
Air Quality Assessment

Technical Memorandum

TO: Cristina Lowery
AECOM

FROM: Terry A. Hayes Associates Inc.

DATE: February 12, 2020

RE: Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System Project – Air Quality Assessment

Introduction

Terry A. Hayes Associates Inc. (TAHA) has completed an Air Quality Assessment for the Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System Project (proposed project) in accordance with the provisions of the California Environmental Quality Act (CEQA) Statutes and Guidelines. The Air Quality Assessment is organized as follows:

- Project Description
- Air Quality Topical Information
- Regulatory Framework
- Existing Setting
- Significance Thresholds
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Project Description

The Los Angeles Department of Water and Power (LADWP) proposes to implement the Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System Project (proposed project) within its Silver Lake Reservoir Complex (SLRC), which comprises the Silver Lake and Ivanhoe Reservoirs (the reservoirs).

The proposed project would be located in the Silver Lake community of the City of Los Angeles, approximately five miles north of downtown Los Angeles. **Figure 1** shows the regional vicinity of the project site. **Figure 2** shows the project location. The reservoirs require an aeration and recirculation system to ensure that reasonable water quality parameters are met for visual aesthetics and controlling odors. The proposed project would include the installation of a bubble plume aeration system and a recirculation pipe system to ensure oxygenation and destratification of the reservoirs. Destratification allows for the mixing of the reservoir water to allow for oxygen levels to be maintained throughout the reservoir. **Figure 3** shows the aeration and recirculation systems proposed to be installed in the reservoirs. The proposed project would be implemented in two phases as described below.

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Source: Esri Maps & Data, 2019.

Figure 1
Regional Map

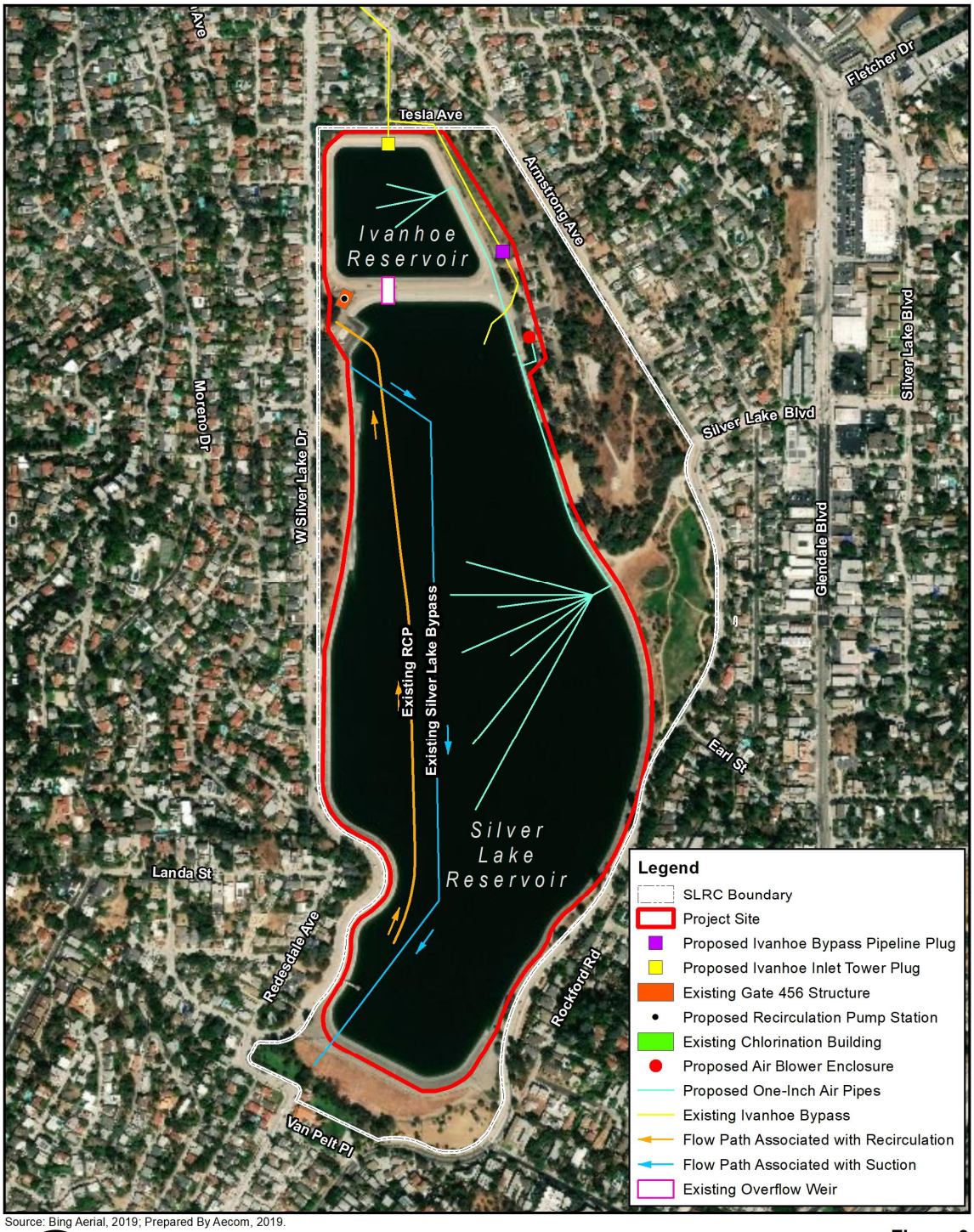


Source: Esri, 2020; Prepared By AECOM, 2020.

0 250 500 1,000 Feet

SLRC Boundary
Project Site

Figure 2
Project Location Map



Source: Bing Aerial, 2019; Prepared By Aecom, 2019.

0 250 500 1,000 Feet

Figure 3
Proposed Project
Aeration and Recirculation System

Phase 1 would include installation of an aeration system consisting of air blowers, air piping to each of the reservoirs, bubble plume system diffusers in each of the reservoirs, and aftercoolers. Two air blowers would be installed for each reservoir, including one in continuous operation and one to serve as a backup. The air blowers would be housed in an enclosure with ventilation and sound insulation. The air blower package enclosure would be located inside an existing chlorination building in the northeast portion of the SLRC between the two reservoirs.

Phase 2 would include the installation of a recirculation system consisting of a recirculation pump station, recirculation piping, and inflow from Ivanhoe Reservoir to Silver Lake Reservoir via the existing overflow weir. Additionally, two concrete plugs and approximately 400 feet of new recirculation piping would be installed within Ivanhoe Reservoir. The concrete plugs would be installed at the existing Ivanhoe Bypass and Ivanhoe Inlet Tower. The recirculation pump equipment would be installed at the existing Gate 456 structure, which is a fenced gate structure on the northwest corner of Silver Lake Reservoir that was historically used for water bypass when both Silver Lake and Ivanhoe Reservoirs were connected to the potable water system. Two submersible recirculation pumps would be installed along the depths of both Silver Lake and Ivanhoe Reservoirs and within the Gate 456 structure, with one pump on duty and the other on standby during normal operations. Both pumps would have the flexibility to operate simultaneously under special conditions. Suction intake would be located at the south end of the Silver Lake Reservoir along the existing Silver Lake Bypass pipeline and discharge would occur at the north end of Ivanhoe Reservoir. The recirculation piping would be connected to the recirculation pump to transfer water from Silver Lake Reservoir to Ivanhoe Reservoir over a partition wall within the Gate 456 structure. Inflow from Ivanhoe Reservoir to Silver Lake Reservoir would occur via the existing weir over the Silver Lake North Dam between the reservoirs.

Construction Activities and Schedule

Construction of Phase 1 is anticipated to begin in November 2020 and take approximately 13 months to complete, concluding in December 2021. Construction of Phase 2 is anticipated to begin at the end of Phase 1 and take approximately 16 months to complete. Construction activities would occur Mondays through Friday from 7:00 a.m. to 3:00 p.m. Construction vehicle access would be available via the existing driveway at the northeastern corner of the SLRC near the intersection of Tesla Avenue and Armstrong Avenue. It is anticipated that haul trucks and construction workers would travel south to the project site from Sun Valley using Interstate 5 (I-5), then travel south on Riverside Drive to Glendale Boulevard, and then west on Lakewood Avenue to Armstrong Avenue. All construction activities would occur completely within the boundaries of the SLRC. Construction staging and laydown areas would also occur within the SLRC.

Phase 1 – Reservoir Aeration. Construction activities at each reservoir would consist of construction of the aeration header at the existing chlorination building, installation of the pre-assembled air blower enclosures for the aeration system, installation of the pipeline connections, and assembly of the diffusers. As previously discussed, the air blowers for the aeration system would be housed in a sound-insulated enclosure. Site preparation for the enclosure would include demolition of existing concrete slabs, installation of 40 polyvinyl chloride (PVC) conduits, and construction and casting of concrete and equipment pads. The concrete and equipment pads would require the site to be cleared, excavated up to three feet, and graded. The enclosure units would be installed within the existing chlorination building behind its concrete walls.

Following construction of the air blower enclosures, air pipes would be installed from the air blowers to diffuser systems at each reservoir. The pipes would be installed underground utilizing trenching and backfilling methods, with the exception of self-weighted lines that would extend within the reservoir.

Approximately 1,021 linear feet of pipeline would be required for Ivanhoe Reservoir and approximately 1,076 linear feet of pipeline would be required for Silver Lake Reservoir. As previously discussed, the diffusers would consist of a diffuser and a manifold, which would be strategically placed across the reservoirs for optimal aeration. After installation of the pipelines and diffuser systems, the existing control panel would be moved from the existing chlorination building to the newly constructed enclosures. The air blowers and associated piping and supports and ventilation system would be installed within the enclosure. Aftercoolers would be located outside of the enclosures, and a sunshade and would be constructed to protect the equipment.

It is anticipated that approximately 1,102 cubic yards of materials would be imported to the project site, including 684 cubic yards of crushed aggregate base, 78 cubic yards of asphalt, 98 cubic yards of concrete, and 233 cubic yards of slurry. Additionally, approximately 1,045 cubic yards of materials would be excavated and exported from the project site, including 982 cubic yards of soil, 35 cubic yards of asphalt, and 28 cubic yards of concrete. Materials required for construction would be stored on site, with the exception of asphalt and concrete. Construction of Phase 1 of the proposed project would require a total of approximately 277 truck trips consisting of 101 trips for imported materials, 88 trips for exported materials, and 88 additional haul truck trips.

The estimated daily average of on-site workers would consist of a peak of 29 workers per day. Construction worker vehicle trips would account for approximately 277 roundtrips for the duration of 13 months, with an average of approximately 22 roundtrips per month.

Construction activities for Phase 1 would require approximately 10 pieces of equipment, including an asphalt paver, backhoe loader, barge, butt fusion machine, crane, front end loader, fork lift, generator, roller, and vibrating plate as well as maintenance and dump trucks. All equipment would be stored on site. The estimated daily peak number of equipment on site would be three pieces with an average of two pieces. The estimated daily peak number of trucks on-site would be six trucks during the construction of the air blowers and enclosures and four trucks during installation of the pipelines, with a daily average of three trucks on site for the entire duration of Phase 1.

Phase 2 - Recirculation System. Construction activities for Phase 2 include installation of pipeline in Ivanhoe Reservoir, installation of concrete plugs at the existing Ivanhoe Bypass and Ivanhoe Inlet tower, demolition of the existing equipment in the Gate 456 structure, installation of a suction intake on the existing Silver Lake bypass pipeline, and construction of the recirculation pump station within the Gate 456 structure, including a partition wall. Demolition would involve removal of existing electrical and mechanical equipment and an existing concrete slab within the Gate 456 structure.

Prior to installation of the concrete plugs, the water from Ivanhoe Reservoir would be pumped into Silver Lake Reservoir. Following draining of the water, 400 linear feet of pipeline would be placed and casted with concrete within Ivanhoe Reservoir to recirculate water within this reservoir. The concrete plugs would be formed on-site, placed in the Ivanhoe Bypass and then the Ivanhoe Tower Inlet, and finished with additional concrete.

The recirculation pump station equipment would be located within the Gate 456 structure adjacent to the equipment enclosures associated with the Silver Lake Regulating Station. Construction activities for the recirculation pump station would include excavation up to four feet for a 15-foot by 27-foot duct bank, construction of 40 PVC conduits, casting equipment pads and concrete slabs for a 6-foot by 3-foot sized enclosure, installation of the control system, and connecting the control panel to the equipment and pipes. The pumps would be placed below-grade within a hydraulic structure, which would be shielded from view at the property line.

Approximately 100 feet of piping would be installed within the Gate 456 structure, which would pump water from Silver Lake Reservoir over a partition wall to Ivanhoe Reservoir. Inflow from Ivanhoe Reservoir to Silver Lake Reservoir would occur via the existing weir over the Silver Lake North Dam between the reservoirs. Following installation of the piping, Ivanhoe Reservoir would be refilled via gravity through the existing Gate 456 structure.

It is anticipated that approximately 167 cubic yards of materials would be imported to the project site consisting of 21 cubic yards of crushed aggregate base, 5 cubic yards of asphalt, 141 cubic yards of concrete, and 8 cubic yards of slurry. Additionally, approximately 64 cubic yards of materials would be exported from the project site consisting of 35 cubic yards of soil, 2 cubic yards of asphalt, and 27 cubic yards of concrete. Materials required for construction, except for asphalt and concrete, would be stored on site. Construction of Phase 2 of the proposed project would require a total of approximately 81 truck trips consisting of 45 trips for imported materials, 8 trips for exported materials, and 28 additional haul truck trips.

The estimated daily peak number of on-site workers would be 22 workers. Construction worker vehicle trips would account for approximately 278 roundtrips for the duration of 16 months, with an average of approximately 18 roundtrips per month.

Construction activities for Phase 2 of the proposed project would require approximately 10 pieces of equipment, including an asphalt paver, backhoe loader, barge, butt fusion machine, crane, front end loader, fork lift, generator, roller, and vibrating plate as well as maintenance and dump trucks. All equipment would be stored on site. The estimated daily peak number of equipment on-site would be three pieces with an average of two pieces. The estimated daily peak number of trucks on-site would be six trucks with a daily average of three trucks on-site for the entire duration of Phase 2.

An appropriate combination of monitoring and resource impact avoidance would be employed during all the construction activities, including implementation of the following best management practices:

- The proposed project would implement Rule 403 dust control measures required by the SCAQMD, which would include the following:
    - Water shall be applied to exposed surfaces at least two times per day to prevent generation of dust plumes.
    - All haul trucks hauling soil, sand, and other loose materials shall be covered (e.g., with tarps or other enclosures that would reduce fugitive dust emissions).
    - Construction activity on exposed or unpaved dirt surfaces shall be suspended when wind speed exceeds 25 miles per hour.
    - Ground cover in disturbed areas shall be replaced in a timely fashion when work is completed in the area.
    - A community liaison shall be identified to address concerns regarding on-site construction activity including resolution of issues related to dust generation.
    - Apply non-toxic soil stabilizers according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for ten days or more).
    - Sweep streets at the end of the day if visible soil is carried onto adjacent public paved roads. If feasible, use water sweepers with reclaimed water.

Air Quality Topical Information

Air quality is typically characterized by ambient air concentrations of seven specific pollutants identified by the United States Environmental Protection Agency (USEPA) to be of concern with respect to health and welfare of the general public. These specific pollutants, known as criteria air pollutants, are pollutants for which the federal and State governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. These pollutants are common byproducts of human activities and have been documented through scientific research to cause adverse health effects. The federal ambient concentration criteria are known as the National Ambient Air Quality Standards (NAAQS), and the California ambient concentration criteria are referred to as the California Ambient Air Quality Standards (CAAQS). Federal criteria air pollutants include ground-level ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), respirable particulate matter ten microns or less in diameter (PM_{10}), fine particulate matter 2.5 microns or less in diameter ($PM_{2.5}$), and lead. In addition to the federal criteria pollutants, the state regulates visibility-reducing particles, sulfates, hydrogen sulfide, and vinyl chloride.

Air toxics are generally defined as those contaminants that are known or suspected to cause serious health problems, but do not have a corresponding ambient air quality standard. Air toxics are also defined as an air pollutant that may increase a person's risk of developing cancer and/or other serious health effects; however, the emission of a toxic chemical does not automatically create a health hazard. Air toxics include, but are not limited to, diesel PM, metals, gases absorbed by particles, and certain vapors from fuels and other sources.

Regulatory Framework

The following discussion includes relevant regulations, policies, and programs that have been adopted by federal, state, and local agencies to protect air quality and public health.

Federal

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

TABLE 1: AMBIENT AIR QUALITY STANDARDS AND ATTAINMENT STATUS DESIGNATIONS

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

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

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

State

Air quality in California is also governed by more stringent regulations under the California Clean Air Act (CCAA). The CCAA is administered by the California Air Resources Board (CARB) at the state level and by the air quality management districts at the regional and local levels. The CCAA requires all areas of the state to achieve and maintain the CAAQS by the earliest feasible date, which is determined in the most recent State Implementation Plan (SIP) based on existing emissions and reasonably foreseeable control measures that will be implemented in the future. The CAAQS are also summarized in **Table 1**, which also presents the attainment status designations for the Los Angeles County portion of the South Coast Air Basin (Basin).

The CARB's statewide comprehensive air toxics program was established in the early 1980s. The Toxic Air Contaminant Identification and Control Act created California's program to reduce exposure to air toxics. Under the Toxic Air Contaminant Identification and Control Act, the CARB is required to prioritize the identification and control of air toxics emissions. In selecting substances for review, the CARB must consider criteria relating to the risk of harm to public health, such as amount or potential amount of emissions, manner of and exposure to usage of the substance in California, persistence in the atmosphere, and ambient concentrations in the community.

Regional

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

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

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

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

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

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

Existing Setting

The Basin is subject to high levels of air pollution due to the immense magnitude of emissions sources and the combination of topography, low mean atmospheric mixing height, and abundant sunshine. Although the Basin has a semiarid climate, air near the surface is generally moist because of the presence of a shallow marine layer. With very low average wind speeds, there is a limited capacity to disperse air contaminants horizontally. The mountains and hills surrounding the Basin contribute to the variation of rainfall, temperature, and winds throughout the region. During the spring and early summer, pollution produced during any one day is typically blown out of the Basin through mountain passes or lifted by warm, vertical currents adjacent to mountain slopes. The vertical dispersion of air pollutants in the Basin is limited by temperature inversions in the atmosphere close to the Earth's surface. The combination of stagnant wind conditions and low inversions produces the greatest pollutant concentrations. On days of no inversion or high wind speeds, ambient air pollutant concentrations are lowest. During periods of low inversions and low wind speeds, air pollutants become more concentrated in urbanized areas with pollution sources of greater magnitude.

Air quality within the Basin region is characterized by concentrations of air pollutants measured at 37 monitoring stations located throughout the SCAQMD jurisdiction. The Basin is divided geographically into 38 source receptors areas (SRAs), each of which contains an air quality monitoring station excluding SRA 7. The SRA boundaries were drawn based on proximity to the nearest air monitoring station, the local emission inventories, and surrounding topography. The proposed project site is located in SRA 1 (Central Los Angeles County). Ambient concentrations of O_3 and $PM_{2.5}$ exceed the associated NAAQS and CAAQS numerous times over the three-year period. Additionally, concentrations of PM_{10} exceeded the CAAQS in all three years. The data demonstrate the ongoing challenges that the region faces with regards to improving air quality and bringing the Basin into attainment of the federal and state standards.

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. The CARB has identified the following groups who are most likely to experience adverse health effects due to exposure to air pollution: children less than 14 years of age, the elderly over 65 years of age, athletes, and people with cardiovascular and chronic respiratory diseases. According to the SCAQMD, land uses that constitute sensitive receptors include residences, schools, playgrounds, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. The SCAQMD has established 500 meters, or 1,640 feet, as the distance for assessing localized air quality impacts. The project is located in an urban environment and many sensitive receptors are located near construction zones. The project area is densely populated with residences. The Neighborhood Nursery School is located just east of the Ivanhoe Reservoir and both reservoirs are surrounded by recreational open space.

Significance Thresholds

This Impact Assessment was undertaken to determine whether construction or operation of the proposed project would have the potential to result in significant environmental impacts related to Air Quality in the context of the Appendix G Environmental Checklist criteria of the CEQA Statute and Guidelines. Implementation of the proposed project may result in a significant environmental impact related to Air Quality if the proposed project would:

a) Conflict with or obstruct implementation of the applicable air quality plan;

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard;

c) Expose sensitive receptors to substantial pollutant concentrations; and/or,

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

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

Table 2 shows regional and localized significance thresholds for volatile organic compounds (VOC), NO_X, CO, sulfur oxides (SO_X), and particulate matter (PM_{10} and $PM_{2.5}$). The localized air quality significance thresholds are specific to SRA 1 for a one-acre construction site with sensitive receptors within 80 feet (approximately 25 meters) and were obtained from the SCAQMD Localized Significance Threshold (LST) guidance document. The LST methodology document contains SRA-specific values for maximum allowable on-site emissions (i.e., construction equipment and fugitive dust) during construction based on locally monitored air quality, the size of maximum daily disturbed area, and the proximity of sensitive receptors. Maximum on-site emissions resulting from construction activities were quantified and assessed against the applicable LST values for a one-acre project site having sensitive receptors within 80 feet (approximately 25 meters) of the project site boundary in SRA 1.

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

Pollutant	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
CONSTRUCTION						
Regional Threshold (lbs/day)	75	100	550	150	150	55
Localized Threshold (lbs/day)	--	74	680	--	5	3
OPERATIONS						
Regional Threshold (lbs/day)	55	55	550	150	150	55
Localized Threshold (lbs/day)	--	74	680	--	2	1

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

Regarding substantial pollutant concentrations, a significant air quality impact would occur if the proposed project resulted in a residential carcinogenic risk above 10 excess cancers per million, or an acute hazard index (HI) equal to or greater than 1.0.

Methodology

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

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

and passenger vehicles that have been derived by the CARB through extensive air quality investigations and surveys. The default values were used in conjunction with project-specific information to determine reasonable estimates of daily construction activities.

Localized air pollutant emissions from construction activities were analyzed in accordance with the SCAQMD LST methodology. The LST methodology was devised to prevent small-scale hot spot concentrations of air pollutants from exceeding ambient air quality standards at nearby sensitive receptors. The LST methodology document contains SRA-specific values for maximum allowable on-site emissions (i.e., construction equipment and fugitive dust) during construction based on locally monitored air quality, the size of maximum daily disturbed area, and the proximity of sensitive receptors. Maximum on-site emissions resulting from construction activities were quantified and assessed against the applicable LST values for a one-acre project site having sensitive receptors within 50 feet (approximately 25 meters) of the project site boundary in SRA 1.

Impact Assessment

a) Would the proposed project conflict with or obstruct implementation of the applicable air quality plan? (Less-Than-Significant Impact)

The following analysis addresses the consistency with applicable SCAQMD and SCAG policies, including the SCAQMD's 2016 AQMP and growth projections within the SCAG's 2016–2040 RTP/SCS. Although the SCAG has published the Draft 2020-2045 RTP/SCS, it has not been formally adopted by SCAG and therefore not considered in this analysis. In accordance with the procedures established in the SCAQMD's CEQA Air Quality Handbook, the following criteria are required to be addressed in order to determine the consistency with applicable SCAQMD and SCAG policies:

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

The first indicator is assessed by comparing emissions of air pollutants that would be produced by construction and operation of the proposed project to the SCAQMD significance thresholds, both on regional and localized scales. The regional and localized air quality significance thresholds were designed to prevent the occurrence and exacerbation of air quality violations resulting from construction and operation of individual CEQA projects in the context of existing ambient air quality conditions. The second indicator is assessed by determining consistency of permanent operations with population, housing, and employment assumptions that were used in the development of the AQMP and the RTP/SCS.

Construction

Construction of the proposed project has the potential to create air quality impacts through the use of heavy-duty construction equipment and through vehicle trips by construction workers and haul trucks traveling to and from the project site. Fugitive dust emissions would primarily result from site preparation (e.g., clearing,

grading, excavation, and loading) activities. NO_X emissions would predominantly result from the use of construction equipment and haul truck trips. The assessment of construction air quality impacts considers all of these emissions sources. Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation and, for dust, the prevailing weather conditions.

It is mandatory for all construction projects in the Basin to comply with SCAQMD Rule 403 for Fugitive Dust. Rule 403 control requirements include measures to prevent the generation of visible dust plumes. Measures include, but are not limited to, applying soil binders to uncovered areas, reestablishing ground cover as quickly as possible, utilizing a wheel washing system or other control measures to remove bulk material from tires and vehicle undercarriages before vehicles exit the project site, and maintaining effective cover over exposed areas. Compliance with the provisions and best management practices propagated by Rule 403—such as the application of water as a dust suppressant to exposed stockpiles and disturbed ground surfaces—would reduce regional fugitive dust PM_{10} and $PM_{2.5}$ emissions associated with construction activities by approximately 61 percent.

Daily emissions of VOC, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$ were estimated using CalEEMod. **Tables 4** and **5** show the maximum unmitigated daily regional emissions for each construction activity for each phase of the project, including emissions from sources located both on- and off-site. As stated above, the unmitigated emissions account for the provisions of SCAQMD Rule 403, which requires best management practice in fugitive dust control that achieve a 61 percent reduction from on-site fugitive dust sources including disturbed ground surface and material stockpiles. Maximum daily emissions of all air pollutants would remain below all applicable regional SCAQMD thresholds during construction of the proposed project, and air quality impacts would be less than significant.

TABLE 4: ESTIMATED DAILY CONSTRUCTION EMISSIONS (PHASE 1)

Phase	Daily Emissions (Pounds Per Day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
DEMOLITION						
On-Site Emissions	1.1	9.6	9.4	<0.1	0.6	0.5
Off-Site Emissions	0.2	11	1.8	<0.1	0.5	0.1
Total	***1.3***	***20.6***	***11.2***	***<0.1***	***1.1***	***0.6***
SITE PREPARATION						
On-Site Emissions	3.2	27	22	<0.1	1.9	1.8
Off-Site Emissions	0.4	0.9	3.3	<0.1	1.0	0.3
Total	***3.6***	***27.9***	***25.5***	***<0.1***	***2.9***	***2.1***
CONSTRUCTION						
On-Site Emissions	1.4	13	13	<0.1	0.7	0.7
Off-Site Emissions	0.3	0.2	2.1	<0.1	0.7	0.2
Total	***1.7***	***13.2***	***15.1***	***<0.1***	***1.4***	***0.9***
REGIONAL ANALYSIS						
Maximum Regional Daily Emissions	**3.6**	**27.9**	**25.5**	**<0.1**	**2.9**	**2.1**
Regional Significance Threshold	75	100	550	150	150	55
Exceed Regional Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
LOCALIZED ANALYSIS						
Maximum Localized Daily Emissions	**--**	**27**	**22**	**--**	**1.9**	**1.8**
Localized Significance Threshold	--	74	680	--	5	3
Exceed Localized Threshold?	**--**	**No**	**No**	**--**	**No**	**No**

Note: Emissions modeling files can be found in the **Appendix**.
SOURCE: TAHA, 2020.

TABLE 5: ESTIMATED DAILY CONSTRUCTION EMISSIONS (PHASE 2)

Phase	Daily Emissions (Pounds Per Day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
DEMOLITION						
On-Site Emissions	1.0	8.8	9.4	<0.1	0.5	0.5
Off-Site Emissions	0.1	0.2	1.1	<0.1	<0.0	0.1
Total	***1.1***	***9.1***	***10.5***	***<0.1***	***0.5***	***0.6***
SITE PREPARATION						
On-Site Emissions	1.4	12	11	<0.1	0.8	0.7
Off-Site Emissions	0.1	0.2	1.0	<0.1	0.3	0.1
Total	***1.5***	***12.2***	***12***	***<0.1***	***1.1***	***0.8***
CONSTRUCTION						
On-Site Emissions	2.3	23	25	<0.1	1.2	1.1
Off-Site Emissions	0.4	0.3	2.9	<0.1	1.0	0.3
Total	***2.7***	***23.3***	***27.9***	***<0.1***	***2.2***	***1.4***
REGIONAL ANALYSIS						
Maximum Regional Daily Emissions	**2.7**	**23.3**	**27.9**	**<0.1**	**2.2**	**1.4**
Regional Significance Threshold	75	100	550	150	150	55
Exceed Regional Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
LOCALIZED ANALYSIS						
Maximum Localized Daily Emissions	**--**	**23**	**25**	**<0.1**	**1.2**	**1.1**
Localized Significance Threshold	--	74	680	--	5	3
Exceed Localized Threshold?	**--**	**No**	**No**	**--**	**No**	**No**

Note: Emissions modeling files can be found in the **Appendix**.
SOURCE: TAHA, 2020.

In addition to maximum daily regional emissions, maximum localized (on-site) emissions were quantified for each construction activity. Sources of emissions located on the project site include heavy-duty equipment exhaust and fugitive dust. As mentioned previously, LST values have only been derived for the pollutants NO_X, CO, PM_{10}, and $PM_{2.5}$. The LST values selected for the screening analysis are applicable to a one-acre daily disturbance area in SRA 1 within 25 meters of sensitive receptors. **Tables 4** and **5** present the results of emissions modeling from on-site construction sources and analysis in the context of the LST methodology, which is designed to prevent the occurrence of substantially elevated small-scale concentrations in close proximity to construction sites.

Maximum on-site emissions during project construction would not exceed the applicable LST values, therefore construction of the proposed project would not result in a significant localized air quality impact related to the frequency or severity of air quality violations. With respect to the first criterion, localized concentrations of nitrogen dioxide as NO_X, CO, PM_{10}, and $PM_{2.5}$ have been analyzed for the proposed project. Sulfur dioxide (SO_2) emissions, assessed as SO_X within the SCAQMD thresholds, would be negligible during construction, and, therefore, would not have the potential to cause or affect a violation of the SO_2 ambient air quality standard. Since VOCs are not a criteria pollutant, there is no ambient standard or localized threshold for VOCs.

Due to the role VOCs play in ozone formation, it is classified as a precursor pollutant, and only a regional emissions threshold has been established.

Operations

Operational activities associated with the proposed project would be minimal. Implementation of the proposed project would require one maintenance trip three times per week. Indirect emissions would be related to electricity consumption to power mechanical equipment. Both sources of emissions generate pollution off the project site, which means they are not localized sources of pollution. **Table 6** shows that operational emissions would not exceed the SCAQMD thresholds. Operation of the proposed project would not have any potential to exacerbate the frequency or severity of air quality violations and would result in a less-than-significant air quality impact related to air quality violations.

TABLE 6: ESTIMATED DAILY OPERATIONAL EMISSIONS

	Daily Emissions (Pounds Per Day)					
Source	**VOC**	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Maintenance Trips (Off-Site Emissions)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Energy Use (Off-Site Emissions)	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total	***0.1***	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**
REGIONAL ANALYSIS						
Maximum Regional Daily Emissions	*0.1*	<0.1	<0.1	<0.1	<0.1	<0.1
Regional Significance Threshold	55	55	550	150	150	55
Exceed Regional Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
LOCALIZED ANALYSIS						
Maximum Localized Daily Emissions	**--**	**<0.1**	**<0.1**	**--**	**<0.1**	**<0.1**
Localized Significance Threshold	--	74	680	--	2	1
Exceed Localized Threshold?	**--**	**No**	**No**	**--**	**No**	**No**

Note: Emissions modeling files can be found in the **Appendix**.
SOURCE: TAHA, 2020.

The second consistency criterion requires that the proposed project not exceed the assumptions in the AQMP, thereby rendering the regional emissions inventory inaccurate. Implementation of the proposed project would not introduce new population, housing, and employment projections for the region would not be affected. The proposed project would not have any potential to result in growth that would exceed the projections incorporated into the AQMP or the 2016–2040 RTP/SCS. The proposed project would not interfere with air pollution control measures listed in the 2016 AQMP and would not conflict with the goals of the General Plan Air Quality Element. Therefore, impacts related to conflict with or obstruction of the applicable air quality plan would be less than significant.

Mitigation Measures

No mitigation measures are required.

b) Would the proposed project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard? (Less-than-Significant Impact)

The Basin is currently designated nonattainment for O_3, PM_{10}, and $PM_{2.5}$ under the state standards and nonattainment for O_3 and $PM_{2.5}$ under the federal standards. Therefore, a project may result in a cumulatively considerable air quality impact under this criterion if daily emissions of ozone precursors (VOC and NO_X) or particulate matter (PM_{10} and $PM_{2.5}$) exceed applicable air quality thresholds of significance established by the SCAQMD. The SCAQMD designed the regional mass daily thresholds and LST values to prevent projects from exceeding the ambient air quality standards and potentially resulting in air quality violations. The SCAQMD suggests that if any quantitative air quality significance threshold is exceeded by an individual project during construction activities or operation, that project is considered cumulatively considerable and would be required to implement effective and feasible mitigation measures to reduce air quality impacts.

Conversely, the SCAQMD propagates the guidance that if an individual project would not exceed the regional mass daily thresholds or LST values, then it is generally not considered to be cumulatively significant. This method of impact determination allows for the screening of individual projects that would not represent substantial new sources of emissions in the Basin; it also serves to exclude smaller projects from the responsibility of identifying potentially concurrent new or proposed construction and operation emissions nearby since the incremental contribution to regional emissions is minor. As shown above, implementation of the proposed project would not exceed any applicable SCAQMD regional mass daily thresholds or LST values during construction or operation. Therefore, the proposed project would not generate cumulatively considerable emissions of ozone precursors or particulate matter and impacts would be less than significant.

Mitigation Measures

No mitigation measures are required.

c) Would the proposed project expose sensitive receptors to substantial pollutant concentrations? (Less-Than-Significant Impact)

The SCAQMD devised its LST values to prevent the occurrence of localized hot spots of criteria pollutant concentrations at sensitive receptor locations surrounding the project site. The LST values were determined using emissions modeling based on ambient air quality measured throughout the South Coast Air Basin. If maximum daily emissions remain below the LST values during construction activities, it is highly unlikely that air pollutant concentrations in ambient air would reach substantial levels sufficient to create public health concerns for sensitive receptors. As shown in **Tables 4** and **5**, maximum daily emissions of criteria pollutants and O_3 precursors from sources located on the project site would not exceed any applicable LST values. Therefore, construction of the proposed project would not result in exposure of sensitive receptors to substantial concentrations of criteria pollutants.

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

Over the course of construction activities, average diesel PM emissions from on-site equipment would be approximately 0.65 pounds per day. It is highly unlikely that diesel PM concentrations would be of any public health concern, and diesel PM emissions would cease upon completion of construction activities. Therefore, this impact would be less than significant and no mitigation is required.

Mitigation Measures

No mitigation measures are required.

d) Would the proposed project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people? (Less-than-Significant Impact)

Construction

Odors are the only potential construction emissions other than the sources addressed above. Potential sources that may produce objectionable odors during construction activities include equipment exhaust, application of asphalt and architectural coatings, and other interior and exterior finishes. Odors from these sources would be localized and generally confined to the immediate area surrounding the project site, would be temporary in nature, and would not persist beyond the termination of construction activities. The proposed project would utilize standard construction techniques, and the odors would be typical of most construction sites. In addition, as construction-related emissions dissipate away from the construction area, the odors associated with these emissions would also decrease and would be quickly diluted. LADWP would ensure that activities comply with SCAQMD Rules 402 (Nuisance) and 401 (Visible Emissions) to prevent the occurrence of public nuisances and visible dust plumes traveling off-site. Therefore, the proposed project would result in a less-than-significant impact related to construction odors and other nuisances.

Operations

Odors are the only potential operational emissions other than the sources addressed above. One objective of the proposed project is to control algal growth and associated odors at Silver Lake and Ivanhoe Reservoirs by installing an aeration and recirculation system to properly mix and destratify the water body and ensure full water transfer between both basins. As such, operation of the proposed project would result in a beneficial impact related to odors and would have no potential to generate new, adverse odors. In addition, land uses and industrial operations that are associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies and fiberglass molding.[1] The proposed project would not include any of these uses. Therefore, the proposed project would result in a less-than-significant impact related to operational odors or other emissions that may have the potential to cause a public nuisance.

Mitigation Measures

No mitigation measures are required.

[1]SCAQMD, *CEQA Air Quality Handbook*, 1993.

References

California Air Pollution Control Officers Association, *California Emissions Estimator Model (CalEEMod v2016.3.2) User's Guide*, November 2017.

California Air Resources Board, *Ambient Air Quality Standards*, May 2016.

South Coast Air Quality Management District, *CEQA Air Quality Handbook*, 1993.

South Coast Air Quality Management District, *Fact Sheet for Applying CalEEMod to Localized Significance Thresholds*, 2013.

South Coast Air Quality Management District, *Final Localized Significance Threshold Methodology Appendix C Mass Rate Lookup Tables*, updated October 21, 2009.

South Coast Air Quality Management District, *SCAQMD Air Quality Significance Thresholds*, March 2015.

Southern California Association of Governments, *2016–2040 Regional Transportation Plan/Sustainable Communities Strategy*, April 2016.

United States Environmental Protection Agency, *The Green Book Nonattainment Areas for Criteria Pollutants*, https://www.epa.gov/green-book, January 2020.

Phase 1 Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	5.00	1000sqft	0.11	5,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2021
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	1227.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Phase 1 Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System - Los Angeles-South Coast County, Winter

Project Characteristics -

Land Use -

Construction Phase - From PD

Off-road Equipment - From PD. Other Construction Equipment is "barge".

Off-road Equipment - From PD

Off-road Equipment - From PD

Trips and VMT - From PD

Demolition - 28 cubic yards of concrete demolished

Grading - From PD

Vehicle Trips - 3 trips/week; 156 annual trips

Energy Use - Project produces 82.2 MWh annually

Construction Off-road Equipment Mitigation - SCAQMD Rule 403

Mobile Land Use Mitigation -

Energy Mitigation -

Water And Wastewater - No water use on site

Solid Waste - No waste generated on site

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	100.00	225.00
tblConstructionPhase	NumDays	1.00	60.00
tblEnergyUse	T24E	2.25	7.60
tblGrading	AcresOfGrading	30.00	0.50
tblGrading	MaterialExported	0.00	1,045.00
tblGrading	MaterialImported	0.00	1,102.00
tblOffRoadEquipment	HorsePower	187.00	84.00
tblOffRoadEquipment	HorsePower	84.00	81.00

tblOffRoadEquipment	HorsePower	46.00	97.00
tblOffRoadEquipment	LoadFactor	0.41	0.74
tblOffRoadEquipment	LoadFactor	0.74	0.73
tblOffRoadEquipment	LoadFactor	0.45	0.37
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblSolidWaste	SolidWasteGenerationRate	6.20	0.00
tblTripsAndVMT	HaulingTripLength	20.00	12.40
tblTripsAndVMT	HaulingTripLength	20.00	12.40
tblTripsAndVMT	HaulingTripLength	20.00	12.40
tblTripsAndVMT	HaulingTripNumber	4.00	44.00
tblTripsAndVMT	HaulingTripNumber	268.00	0.00
tblTripsAndVMT	VendorTripNumber	0.00	3.00
tblTripsAndVMT	VendorTripNumber	1.00	0.00
tblTripsAndVMT	WorkerTripNumber	10.00	40.00
tblTripsAndVMT	WorkerTripNumber	8.00	40.00
tblTripsAndVMT	WorkerTripNumber	2.00	58.00
tblVehicleTrips	ST_TR	1.32	0.00
tblVehicleTrips	SU_TR	0.68	0.00
tblVehicleTrips	WD_TR	6.97	0.08
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorToDistribute	1,272.00	0.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	0.00
tblWater	ElectricityIntensityFactorToTreat	111.00	0.00
tblWater	IndoorWaterUseRate	1,156,250.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.8942	14.5170	12.6823	0.0226	0.5787	1.0165	1.4957	0.1444	0.9510	1.0766	0.0000	2,203.5561	2,203.5561	0.3181	0.0000	2,208.8275
2021	1.7326	13.5963	14.8443	0.0265	0.6483	0.9084	1.3876	0.1719	0.8492	0.9749	0.0000	2,572.3510	2,572.3510	0.5562	0.0000	2,586.2558
Maximum	**1.8942**	**14.5170**	**14.8443**	**0.0265**	**0.6483**	**1.0165**	**1.4957**	**0.1719**	**0.9510**	**1.0766**	**0.0000**	**2,572.3510**	**2,572.3510**	**0.5562**	**0.0000**	**2,586.2558**

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	1.8942	14.5170	12.6823	0.0226	0.5276	1.0165	1.4879	0.1366	0.9510	1.0757	0.0000	2,203.5561	2,203.5561	0.3181	0.0000	2,208.8275
2021	1.7326	13.5963	14.8443	0.0265	0.6483	0.9084	1.3839	0.1719	0.8492	0.9739	0.0000	2,572.3510	2,572.3510	0.5562	0.0000	2,586.2558
Maximum	**1.8942**	**14.5170**	**14.8443**	**0.0265**	**0.6483**	**1.0165**	**1.4879**	**0.1719**	**0.9510**	**1.0757**	**0.0000**	**2,572.3510**	**2,572.3510**	**0.5562**	**0.0000**	**2,586.2558**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**4.17**	**0.00**	**0.40**	**2.45**	**0.00**	**0.09**	**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	0.1118	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Energy	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Mobile	8.6000e-004	4.4400e-003	0.0126	4.0000e-005	3.7700e-003	4.0000e-005	3.8100e-003	1.0100e-003	4.0000e-005	1.0400e-003		4.5543	4.5543	2.4000e-004		4.5603
Total	**0.1153**	**0.0288**	**0.0335**	**1.9000e-004**	**3.7700e-003**	**1.8900e-003**	**5.6600e-003**	**1.0100e-003**	**1.8900e-003**	**2.8900e-003**		**33.7254**	**33.7254**	**8.0000e-004**	**5.3000e-004**	**33.9049**

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	0.1118	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Energy	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Mobile	8.6000e-004	4.4400e-003	0.0126	4.0000e-005	3.7700e-003	4.0000e-005	3.8100e-003	1.0100e-003	4.0000e-005	1.0400e-003		4.5543	4.5543	2.4000e-004		4.5603
Total	**0.1153**	**0.0288**	**0.0335**	**1.9000e-004**	**3.7700e-003**	**1.8900e-003**	**5.6600e-003**	**1.0100e-003**	**1.8900e-003**	**2.8900e-003**		**33.7254**	**33.7254**	**8.0000e-004**	**5.3000e-004**	**33.9049**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	11/2/2020	11/13/2020	5	10	
2	Site Preparation	Site Preparation	11/16/2020	2/5/2021	5	60	
3	Building Construction	Building Construction	2/8/2021	12/17/2021	5	225	

Acres of Grading (Site Preparation Phase): 0.5

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
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Generator Sets	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	1.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Site Preparation	Generator Sets	1	8.00	84	0.74
Site Preparation	Graders	1	8.00	84	0.74
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Other Construction Equipment	1	8.00	172	0.42
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Welders	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	40.00	0.00	44.00	14.70	6.90	12.40	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	40.00	3.00	0.00	14.70	6.90	12.40	LD_Mix	HDT_Mix	HHDT
Building Construction	6	58.00	0.00	0.00	14.70	6.90	12.40	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0839	0.0000	0.0839	0.0127	0.0000	0.0127			0.0000			0.0000
Off-Road	1.0899	9.6030	9.4377	0.0159		0.5540	0.5540		0.5405	0.5405		1,514.3235	1,514.3235	0.1773		1,518.7565
Total	**1.0899**	**9.6030**	**9.4377**	**0.0159**	**0.0839**	**0.5540**	**0.6379**	**0.0127**	**0.5405**	**0.5532**		**1,514.3235**	**1,514.3235**	**0.1773**		**1,518.7565**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0276	0.9491	0.2121	2.2700e-003	0.0477	2.6400e-003	0.0504	0.0131	2.5200e-003	0.0156		246.2645	246.2645	0.0196		246.7538
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	0.2044	0.1450	1.6040	4.4500e-003	0.4471	3.7400e-003	0.4508	0.1186	3.4400e-003	0.1220		442.9682	442.9682	0.0140		443.3172
Total	**0.2320**	**1.0941**	**1.8161**	**6.7200e-003**	**0.4948**	**6.3800e-003**	**0.5012**	**0.1317**	**5.9600e-003**	**0.1376**		**689.2326**	**689.2326**	**0.0335**		**690.0710**

3.2 Demolition - 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					0.0327	0.0000	0.0327	4.9500e-003	0.0000	4.9500e-003			0.0000			0.0000
Off-Road	1.0899	9.6030	9.4377	0.0159		0.5540	0.5540		0.5405	0.5405	0.0000	1,514.3235	1,514.3235	0.1773		1,518.7565
Total	**1.0899**	**9.6030**	**9.4377**	**0.0159**	**0.0327**	**0.5540**	**0.5867**	**4.9500e-003**	**0.5405**	**0.5455**	**0.0000**	**1,514.3235**	**1,514.3235**	**0.1773**		**1,518.7565**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0276	0.9491	0.2121	2.2700e-003	0.0477	2.6400e-003	0.0504	0.0131	2.5200e-003	0.0156		246.2645	246.2645	0.0196		246.7538
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	0.2044	0.1450	1.6040	4.4500e-003	0.4471	3.7400e-003	0.4508	0.1186	3.4400e-003	0.1220		442.9682	442.9682	0.0140		443.3172
Total	**0.2320**	**1.0941**	**1.8161**	**6.7200e-003**	**0.4948**	**6.3800e-003**	**0.5012**	**0.1317**	**5.9600e-003**	**0.1376**		**689.2326**	**689.2326**	**0.0335**		**690.0710**

3.3 Site Preparation - 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					0.0129	0.0000	0.0129	1.5700e-003	0.0000	1.5700e-003			0.0000			0.0000
Off-Road	1.6786	14.0529	10.9860	0.0150		1.0113	1.0113		0.9461	0.9461		1,438.3443	1,438.3443	0.2988		1,445.8135
Total	**1.6786**	**14.0529**	**10.9860**	**0.0150**	**0.0129**	**1.0113**	**1.0241**	**1.5700e-003**	**0.9461**	**0.9476**		**1,438.3443**	**1,438.3443**	**0.2988**		**1,445.8135**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0112	0.3191	0.0922	7.6000e-004	0.0192	1.5300e-003	0.0207	5.5300e-003	1.4600e-003	6.9900e-003		80.8347	80.8347	5.4100e-003		80.9699
Worker	0.2044	0.1450	1.6040	4.4500e-003	0.4471	3.7400e-003	0.4508	0.1186	3.4400e-003	0.1220		442.9682	442.9682	0.0140		443.3172
Total	**0.2156**	**0.4640**	**1.6963**	**5.2100e-003**	**0.4663**	**5.2700e-003**	**0.4716**	**0.1241**	**4.9000e-003**	**0.1290**		**523.8029**	**523.8029**	**0.0194**		**524.2871**

3.3 Site Preparation - 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					5.0200e-003	0.0000	5.0200e-003	6.1000e-004	0.0000	6.1000e-004			0.0000			0.0000
Off-Road	1.6786	14.0529	10.9860	0.0150		1.0113	1.0113		0.9461	0.9461	0.0000	1,438.3443	1,438.3443	0.2988		1,445.8135
Total	**1.6786**	**14.0529**	**10.9860**	**0.0150**	**5.0200e-003**	**1.0113**	**1.0163**	**6.1000e-004**	**0.9461**	**0.9467**	**0.0000**	**1,438.3443**	**1,438.3443**	**0.2988**		**1,445.8135**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0112	0.3191	0.0922	7.6000e-004	0.0192	1.5300e-003	0.0207	5.5300e-003	1.4600e-003	6.9900e-003		80.8347	80.8347	5.4100e-003		80.9699
Worker	0.2044	0.1450	1.6040	4.4500e-003	0.4471	3.7400e-003	0.4508	0.1186	3.4400e-003	0.1220		442.9682	442.9682	0.0140		443.3172
Total	**0.2156**	**0.4640**	**1.6963**	**5.2100e-003**	**0.4663**	**5.2700e-003**	**0.4716**	**0.1241**	**4.9000e-003**	**0.1290**		**523.8029**	**523.8029**	**0.0194**		**524.2871**

3.3 Site Preparation - 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					0.0129	0.0000	0.0129	1.5700e-003	0.0000	1.5700e-003			0.0000			0.0000
Off-Road	1.5323	12.8736	10.8255	0.0150		0.9042	0.9042		0.8453	0.8453		1,438.1831	1,438.1831	0.2954		1,445.5688
Total	**1.5323**	**12.8736**	**10.8255**	**0.0150**	**0.0129**	**0.9042**	**0.9171**	**1.5700e-003**	**0.8453**	**0.8469**		**1,438.1831**	**1,438.1831**	**0.2954**		**1,445.5688**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	9.5700e-003	0.2907	0.0842	7.5000e-004	0.0192	6.1000e-004	0.0198	5.5300e-003	5.9000e-004	6.1200e-003		80.2037	80.2037	5.1800e-003		80.3331
Worker	0.1907	0.1305	1.4730	4.3000e-003	0.4471	3.6100e-003	0.4507	0.1186	3.3300e-003	0.1219		428.9004	428.9004	0.0126		429.2160
Total	**0.2003**	**0.4211**	**1.5573**	**5.0500e-003**	**0.4663**	**4.2200e-003**	**0.4705**	**0.1241**	**3.9200e-003**	**0.1280**		**509.1041**	**509.1041**	**0.0178**		**509.5491**

3.3 Site Preparation - 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					5.0200e-003	0.0000	5.0200e-003	6.1000e-004	0.0000	6.1000e-004			0.0000			0.0000
Off-Road	1.5323	12.8736	10.8255	0.0150		0.9042	0.9042		0.8453	0.8453	0.0000	1,438.1831	1,438.1831	0.2954		1,445.5688
Total	**1.5323**	**12.8736**	**10.8255**	**0.0150**	**5.0200e-003**	**0.9042**	**0.9092**	**6.1000e-004**	**0.8453**	**0.8459**	**0.0000**	**1,438.1831**	**1,438.1831**	**0.2954**		**1,445.5688**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	9.5700e-003	0.2907	0.0842	7.5000e-004	0.0192	6.1000e-004	0.0198	5.5300e-003	5.9000e-004	6.1200e-003		80.2037	80.2037	5.1800e-003		80.3331
Worker	0.1907	0.1305	1.4730	4.3000e-003	0.4471	3.6100e-003	0.4507	0.1186	3.3300e-003	0.1219		428.9004	428.9004	0.0126		429.2160
Total	**0.2003**	**0.4211**	**1.5573**	**5.0500e-003**	**0.4663**	**4.2200e-003**	**0.4705**	**0.1241**	**3.9200e-003**	**0.1280**		**509.1041**	**509.1041**	**0.0178**		**509.5491**

3.4 Building Construction - 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					
Off-Road	1.3580	13.4071	12.7084	0.0202		0.7303	0.7303		0.6812	0.6812		1,950.4454	1,950.4454	0.5379		1,963.8927
Total	**1.3580**	**13.4071**	**12.7084**	**0.0202**		**0.7303**	**0.7303**		**0.6812**	**0.6812**		**1,950.4454**	**1,950.4454**	**0.5379**		**1,963.8927**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2766	0.1892	2.1359	6.2400e-003	0.6483	5.2400e-003	0.6535	0.1719	4.8300e-003	0.1768		621.9056	621.9056	0.0183		622.3631
Total	**0.2766**	**0.1892**	**2.1359**	**6.2400e-003**	**0.6483**	**5.2400e-003**	**0.6535**	**0.1719**	**4.8300e-003**	**0.1768**		**621.9056**	**621.9056**	**0.0183**		**622.3631**

3.4 Building Construction - 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					
Off-Road	1.3580	13.4071	12.7084	0.0202		0.7303	0.7303		0.6812	0.6812	0.0000	1,950.4454	1,950.4454	0.5379		1,963.8927
Total	**1.3580**	**13.4071**	**12.7084**	**0.0202**		**0.7303**	**0.7303**		**0.6812**	**0.6812**	**0.0000**	**1,950.4454**	**1,950.4454**	**0.5379**		**1,963.8927**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2766	0.1892	2.1359	6.2400e-003	0.6483	5.2400e-003	0.6535	0.1719	4.8300e-003	0.1768		621.9056	621.9056	0.0183		622.3631
Total	**0.2766**	**0.1892**	**2.1359**	**6.2400e-003**	**0.6483**	**5.2400e-003**	**0.6535**	**0.1719**	**4.8300e-003**	**0.1768**		**621.9056**	**621.9056**	**0.0183**		**622.3631**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	8.6000e-004	4.4400e-003	0.0126	4.0000e-005	3.7700e-003	4.0000e-005	3.8100e-003	1.0100e-003	4.0000e-005	1.0400e-003		4.5543	4.5543	2.4000e-004		4.5603
Unmitigated	8.6000e-004	4.4400e-003	0.0126	4.0000e-005	3.7700e-003	4.0000e-005	3.8100e-003	1.0100e-003	4.0000e-005	1.0400e-003		4.5543	4.5543	2.4000e-004		4.5603

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	0.40	0.00	0.00	1,265	1,265
Total	0.40	0.00	0.00	1,265	1,265

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	16.60	8.40	6.90	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.547192	0.045177	0.202743	0.121510	0.016147	0.006143	0.019743	0.029945	0.002479	0.002270	0.005078	0.000682	0.000891

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive 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	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
NaturalGas Unmitigated	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434

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	247.945	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Total		**2.6700e-003**	**0.0243**	**0.0204**	**1.5000e-004**		**1.8500e-003**	**1.8500e-003**		**1.8500e-003**	**1.8500e-003**		**29.1700**	**29.1700**	**5.6000e-004**	**5.3000e-004**	**29.3434**

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	0.247945	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Total		**2.6700e-003**	**0.0243**	**0.0204**	**1.5000e-004**		**1.8500e-003**	**1.8500e-003**		**1.8500e-003**	**1.8500e-003**		**29.1700**	**29.1700**	**5.6000e-004**	**5.3000e-004**	**29.3434**

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	0.1118	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Unmitigated	0.1118	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-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	0.0127					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0990					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.0000e-005	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Total	**0.1118**	**0.0000**	**5.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.0900e-003**	**1.0900e-003**	**0.0000**		**1.1700e-003**

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	0.0127					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0990					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.0000e-005	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Total	**0.1118**	**0.0000**	**5.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.0900e-003**	**1.0900e-003**	**0.0000**		**1.1700e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 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

Phase 2 Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	5.00	1000sqft	0.11	5,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2023
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	1227.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Phase 2 Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System - Los Angeles-South Coast County, Winter

Project Characteristics -

Land Use -

Construction Phase - From PD

Off-road Equipment - From PD. Other Construction Equipment is "barge".

Off-road Equipment - From PD

Off-road Equipment - From PD

Trips and VMT - From PD

Demolition - 27 cubic yards of concrete demolished

Grading - From PD

Vehicle Trips - 3 trips/week; 156 annual trips

Energy Use - Project produces 82.2 MWh annually

Construction Off-road Equipment Mitigation - SCAQMD Rule 403

Mobile Land Use Mitigation -

Energy Mitigation -

Water And Wastewater - No water usage on site

Solid Waste - No solid waste generated on site

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblEnergyUse	T24E	2.25	7.60
tblFleetMix	HHD	0.03	0.03
tblFleetMix	LDA	0.55	0.55
tblFleetMix	LDT1	0.04	0.05
tblFleetMix	LDT2	0.21	0.20
tblFleetMix	LHD1	0.02	0.02
tblFleetMix	LHD2	6.2270e-003	6.1430e-003
tblFleetMix	MCY	5.1840e-003	5.0780e-003

tblFleetMix	MDV	0.12	0.12
tblFleetMix	MH	8.6200e-004	8.9100e-004
tblFleetMix	MHD	0.02	0.02
tblFleetMix	OBUS	2.5460e-003	2.4790e-003
tblFleetMix	SBUS	6.9200e-004	6.8200e-004
tblFleetMix	UBUS	2.1330e-003	2.2700e-003
tblGrading	AcresOfGrading	35.00	0.50
tblGrading	MaterialExported	0.00	64.00
tblGrading	MaterialImported	0.00	167.00
tblOffRoadEquipment	HorsePower	187.00	84.00
tblOffRoadEquipment	HorsePower	84.00	81.00
tblOffRoadEquipment	HorsePower	46.00	97.00
tblOffRoadEquipment	LoadFactor	0.41	0.74
tblOffRoadEquipment	LoadFactor	0.74	0.73
tblOffRoadEquipment	LoadFactor	0.45	0.37
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblSolidWaste	SolidWasteGenerationRate	6.20	0.00
tblTripsAndVMT	HaulingTripLength	20.00	12.40
tblTripsAndVMT	HaulingTripLength	20.00	12.40
tblTripsAndVMT	HaulingTripLength	20.00	12.40
tblTripsAndVMT	HaulingTripNumber	4.00	14.00
tblTripsAndVMT	HaulingTripNumber	29.00	0.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	1.00	0.00
tblTripsAndVMT	WorkerTripNumber	10.00	30.00
tblTripsAndVMT	WorkerTripNumber	8.00	30.00

tblTripsAndVMT	WorkerTripNumber	2.00	44.00
tblVehicleEF	HHD	0.48	0.65
tblVehicleEF	HHD	0.09	0.09
tblVehicleEF	HHD	0.07	0.09
tblVehicleEF	HHD	1.63	2.61
tblVehicleEF	HHD	1.06	1.16
tblVehicleEF	HHD	3.33	3.36
tblVehicleEF	HHD	4,465.78	4,729.35
tblVehicleEF	HHD	1,572.96	1,660.44
tblVehicleEF	HHD	10.75	10.55
tblVehicleEF	HHD	14.30	21.63
tblVehicleEF	HHD	2.12	4.20
tblVehicleEF	HHD	19.50	19.57
tblVehicleEF	HHD	0.01	0.02
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	6.2960e-003	0.02
tblVehicleEF	HHD	9.1000e-005	8.8000e-005
tblVehicleEF	HHD	9.6000e-003	0.02
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8400e-003	8.8360e-003
tblVehicleEF	HHD	6.0240e-003	0.02
tblVehicleEF	HHD	8.3000e-005	8.1000e-005
tblVehicleEF	HHD	1.0300e-004	1.1100e-004
tblVehicleEF	HHD	4.5010e-003	4.8720e-003
tblVehicleEF	HHD	0.41	0.65
tblVehicleEF	HHD	7.8000e-005	8.3000e-005

tblVehicleEF	HHD	0.09	0.15
tblVehicleEF	HHD	3.7200e-004	4.3200e-004
tblVehicleEF	HHD	0.08	0.09
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.02
tblVehicleEF	HHD	1.6200e-004	1.6100e-004
tblVehicleEF	HHD	1.0300e-004	1.1100e-004
tblVehicleEF	HHD	4.5010e-003	4.8720e-003
tblVehicleEF	HHD	0.49	0.76
tblVehicleEF	HHD	7.8000e-005	8.3000e-005
tblVehicleEF	HHD	0.20	0.26
tblVehicleEF	HHD	3.7200e-004	4.3200e-004
tblVehicleEF	HHD	0.08	0.10
tblVehicleEF	HHD	0.45	0.61
tblVehicleEF	HHD	0.09	0.09
tblVehicleEF	HHD	0.07	0.08
tblVehicleEF	HHD	1.19	1.90
tblVehicleEF	HHD	1.07	1.17
tblVehicleEF	HHD	3.16	3.19
tblVehicleEF	HHD	4,731.10	5,008.69
tblVehicleEF	HHD	1,572.96	1,660.44
tblVehicleEF	HHD	10.75	10.55
tblVehicleEF	HHD	14.76	22.32
tblVehicleEF	HHD	2.01	3.97
tblVehicleEF	HHD	19.49	19.56
tblVehicleEF	HHD	8.4600e-003	0.01
tblVehicleEF	HHD	0.06	0.06

tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	6.2960e-003	0.02
tblVehicleEF	HHD	9.1000e-005	8.8000e-005
tblVehicleEF	HHD	8.0940e-003	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8400e-003	8.8360e-003
tblVehicleEF	HHD	6.0240e-003	0.02
tblVehicleEF	HHD	8.3000e-005	8.1000e-005
tblVehicleEF	HHD	1.5600e-004	1.7000e-004
tblVehicleEF	HHD	4.6140e-003	4.9980e-003
tblVehicleEF	HHD	0.39	0.61
tblVehicleEF	HHD	1.1200e-004	1.2100e-004
tblVehicleEF	HHD	0.09	0.15
tblVehicleEF	HHD	3.6000e-004	4.2100e-004
tblVehicleEF	HHD	0.07	0.08
tblVehicleEF	HHD	0.04	0.05
tblVehicleEF	HHD	0.01	0.02
tblVehicleEF	HHD	1.5900e-004	1.5800e-004
tblVehicleEF	HHD	1.5600e-004	1.7000e-004
tblVehicleEF	HHD	4.6140e-003	4.9980e-003
tblVehicleEF	HHD	0.46	0.72
tblVehicleEF	HHD	1.1200e-004	1.2100e-004
tblVehicleEF	HHD	0.20	0.26
tblVehicleEF	HHD	3.6000e-004	4.2100e-004
tblVehicleEF	HHD	0.08	0.09
tblVehicleEF	HHD	0.52	0.70
tblVehicleEF	HHD	0.09	0.09

tblVehicleEF	HHD	0.07	0.09
tblVehicleEF	HHD	2.25	3.58
tblVehicleEF	HHD	1.06	1.16
tblVehicleEF	HHD	3.36	3.39
tblVehicleEF	HHD	4,099.40	4,343.58
tblVehicleEF	HHD	1,572.96	1,660.44
tblVehicleEF	HHD	10.75	10.55
tblVehicleEF	HHD	13.67	20.67
tblVehicleEF	HHD	2.09	4.13
tblVehicleEF	HHD	19.50	19.57
tblVehicleEF	HHD	0.01	0.02
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	6.2960e-003	0.02
tblVehicleEF	HHD	9.1000e-005	8.8000e-005
tblVehicleEF	HHD	0.01	0.02
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8400e-003	8.8360e-003
tblVehicleEF	HHD	6.0240e-003	0.02
tblVehicleEF	HHD	8.3000e-005	8.1000e-005
tblVehicleEF	HHD	1.0000e-004	1.1000e-004
tblVehicleEF	HHD	4.7840e-003	5.2380e-003
tblVehicleEF	HHD	0.45	0.70
tblVehicleEF	HHD	7.6000e-005	8.1000e-005
tblVehicleEF	HHD	0.09	0.15
tblVehicleEF	HHD	4.0500e-004	4.6800e-004
tblVehicleEF	HHD	0.08	0.09

tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.02
tblVehicleEF	HHD	1.6300e-004	1.6100e-004
tblVehicleEF	HHD	1.0000e-004	1.1000e-004
tblVehicleEF	HHD	4.7840e-003	5.2380e-003
tblVehicleEF	HHD	0.53	0.82
tblVehicleEF	HHD	7.6000e-005	8.1000e-005
tblVehicleEF	HHD	0.20	0.26
tblVehicleEF	HHD	4.0500e-004	4.6800e-004
tblVehicleEF	HHD	0.08	0.10
tblVehicleEF	LDA	4.8310e-003	5.9160e-003
tblVehicleEF	LDA	4.7360e-003	6.1880e-003
tblVehicleEF	LDA	0.61	0.71
tblVehicleEF	LDA	1.04	1.27
tblVehicleEF	LDA	263.16	285.63
tblVehicleEF	LDA	54.94	59.19
tblVehicleEF	LDA	0.05	0.06
tblVehicleEF	LDA	0.06	0.08
tblVehicleEF	LDA	2.1170e-003	2.2290e-003
tblVehicleEF	LDA	2.2400e-003	2.3010e-003
tblVehicleEF	LDA	1.9520e-003	2.0560e-003
tblVehicleEF	LDA	2.0590e-003	2.1160e-003
tblVehicleEF	LDA	0.04	0.04
tblVehicleEF	LDA	0.10	0.11
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.04

tblVehicleEF	LDA	0.06	0.08
tblVehicleEF	LDA	2.6360e-003	2.8620e-003
tblVehicleEF	LDA	5.6700e-004	6.1400e-004
tblVehicleEF	LDA	0.04	0.04
tblVehicleEF	LDA	0.10	0.11
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.04
tblVehicleEF	LDA	0.07	0.09
tblVehicleEF	LDA	5.1340e-003	6.2800e-003
tblVehicleEF	LDA	4.2110e-003	5.4950e-003
tblVehicleEF	LDA	0.67	0.78
tblVehicleEF	LDA	0.89	1.09
tblVehicleEF	LDA	275.40	298.94
tblVehicleEF	LDA	54.94	59.19
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.06	0.07
tblVehicleEF	LDA	2.1170e-003	2.2290e-003
tblVehicleEF	LDA	2.2400e-003	2.3010e-003
tblVehicleEF	LDA	1.9520e-003	2.0560e-003
tblVehicleEF	LDA	2.0590e-003	2.1160e-003
tblVehicleEF	LDA	0.06	0.07
tblVehicleEF	LDA	0.10	0.11
tblVehicleEF	LDA	0.05	0.06
tblVehicleEF	LDA	0.01	0.02
tblVehicleEF	LDA	0.04	0.04
tblVehicleEF	LDA	0.06	0.07

tblVehicleEF	LDA	2.7590e-003	2.9960e-003
tblVehicleEF	LDA	5.6400e-004	6.1000e-004
tblVehicleEF	LDA	0.06	0.07
tblVehicleEF	LDA	0.10	0.11
tblVehicleEF	LDA	0.05	0.06
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.04
tblVehicleEF	LDA	0.06	0.08
tblVehicleEF	LDA	4.7330e-003	5.7950e-003
tblVehicleEF	LDA	4.8460e-003	6.3340e-003
tblVehicleEF	LDA	0.59	0.68
tblVehicleEF	LDA	1.08	1.31
tblVehicleEF	LDA	258.68	280.76
tblVehicleEF	LDA	54.94	59.19
tblVehicleEF	LDA	0.05	0.06
tblVehicleEF	LDA	0.06	0.08
tblVehicleEF	LDA	2.1170e-003	2.2290e-003
tblVehicleEF	LDA	2.2400e-003	2.3010e-003
tblVehicleEF	LDA	1.9520e-003	2.0560e-003
tblVehicleEF	LDA	2.0590e-003	2.1160e-003
tblVehicleEF	LDA	0.04	0.04
tblVehicleEF	LDA	0.10	0.12
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.07	0.09
tblVehicleEF	LDA	2.5910e-003	2.8130e-003

tblVehicleEF	LDA	5.6700e-004	6.1400e-004
tblVehicleEF	LDA	0.04	0.04
tblVehicleEF	LDA	0.10	0.12
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.07	0.09
tblVehicleEF	LDT1	0.01	0.02
tblVehicleEF	LDT1	0.01	0.02
tblVehicleEF	LDT1	1.52	1.84
tblVehicleEF	LDT1	2.49	3.09
tblVehicleEF	LDT1	330.49	351.43
tblVehicleEF	LDT1	67.47	71.32
tblVehicleEF	LDT1	0.14	0.17
tblVehicleEF	LDT1	0.14	0.18
tblVehicleEF	LDT1	3.3520e-003	3.7390e-003
tblVehicleEF	LDT1	3.2790e-003	3.5990e-003
tblVehicleEF	LDT1	3.0870e-003	3.4440e-003
tblVehicleEF	LDT1	3.0150e-003	3.3100e-003
tblVehicleEF	LDT1	0.12	0.14
tblVehicleEF	LDT1	0.25	0.28
tblVehicleEF	LDT1	0.10	0.11
tblVehicleEF	LDT1	0.03	0.04
tblVehicleEF	LDT1	0.16	0.18
tblVehicleEF	LDT1	0.17	0.21
tblVehicleEF	LDT1	3.3240e-003	3.5380e-003
tblVehicleEF	LDT1	7.1800e-004	7.6700e-004

tblVehicleEF	LDT1	0.12	0.14
tblVehicleEF	LDT1	0.25	0.28
tblVehicleEF	LDT1	0.10	0.11
tblVehicleEF	LDT1	0.05	0.06
tblVehicleEF	LDT1	0.16	0.18
tblVehicleEF	LDT1	0.18	0.24
tblVehicleEF	LDT1	0.01	0.02
tblVehicleEF	LDT1	0.01	0.01
tblVehicleEF	LDT1	1.65	1.99
tblVehicleEF	LDT1	2.11	2.62
tblVehicleEF	LDT1	344.92	366.73
tblVehicleEF	LDT1	67.47	71.32
tblVehicleEF	LDT1	0.12	0.15
tblVehicleEF	LDT1	0.13	0.16
tblVehicleEF	LDT1	3.3520e-003	3.7390e-003
tblVehicleEF	LDT1	3.2790e-003	3.5990e-003
tblVehicleEF	LDT1	3.0870e-003	3.4440e-003
tblVehicleEF	LDT1	3.0150e-003	3.3100e-003
tblVehicleEF	LDT1	0.19	0.21
tblVehicleEF	LDT1	0.26	0.30
tblVehicleEF	LDT1	0.14	0.16
tblVehicleEF	LDT1	0.04	0.05
tblVehicleEF	LDT1	0.15	0.17
tblVehicleEF	LDT1	0.15	0.19
tblVehicleEF	LDT1	3.4700e-003	3.6940e-003
tblVehicleEF	LDT1	7.1200e-004	7.5900e-004
tblVehicleEF	LDT1	0.19	0.21

tblVehicleEF	LDT1	0.26	0.30
tblVehicleEF	LDT1	0.14	0.16
tblVehicleEF	LDT1	0.05	0.07
tblVehicleEF	LDT1	0.15	0.17
tblVehicleEF	LDT1	0.16	0.21
tblVehicleEF	LDT1	0.01	0.02
tblVehicleEF	LDT1	0.01	0.02
tblVehicleEF	LDT1	1.47	1.79
tblVehicleEF	LDT1	2.57	3.19
tblVehicleEF	LDT1	325.20	345.81
tblVehicleEF	LDT1	67.47	71.32
tblVehicleEF	LDT1	0.14	0.17
tblVehicleEF	LDT1	0.15	0.18
tblVehicleEF	LDT1	3.3520e-003	3.7390e-003
tblVehicleEF	LDT1	3.2790e-003	3.5990e-003
tblVehicleEF	LDT1	3.0870e-003	3.4440e-003
tblVehicleEF	LDT1	3.0150e-003	3.3100e-003
tblVehicleEF	LDT1	0.12	0.14
tblVehicleEF	LDT1	0.28	0.32
tblVehicleEF	LDT1	0.10	0.11
tblVehicleEF	LDT1	0.03	0.04
tblVehicleEF	LDT1	0.19	0.21
tblVehicleEF	LDT1	0.17	0.22
tblVehicleEF	LDT1	3.2700e-003	3.4810e-003
tblVehicleEF	LDT1	7.1900e-004	7.6900e-004
tblVehicleEF	LDT1	0.12	0.14
tblVehicleEF	LDT1	0.28	0.32

tblVehicleEF	LDT1	0.10	0.11
tblVehicleEF	LDT1	0.05	0.06
tblVehicleEF	LDT1	0.19	0.21
tblVehicleEF	LDT1	0.19	0.24
tblVehicleEF	LDT2	6.6130e-003	7.8740e-003
tblVehicleEF	LDT2	5.6850e-003	7.2440e-003
tblVehicleEF	LDT2	0.79	0.90
tblVehicleEF	LDT2	1.23	1.49
tblVehicleEF	LDT2	368.32	395.42
tblVehicleEF	LDT2	75.43	80.68
tblVehicleEF	LDT2	0.07	0.09
tblVehicleEF	LDT2	0.09	0.12
tblVehicleEF	LDT2	2.1490e-003	2.1620e-003
tblVehicleEF	LDT2	2.3760e-003	2.3490e-003
tblVehicleEF	LDT2	1.9770e-003	1.9880e-003
tblVehicleEF	LDT2	2.1840e-003	2.1600e-003
tblVehicleEF	LDT2	0.04	0.05
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	0.04	0.05
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.08	0.10
tblVehicleEF	LDT2	3.6890e-003	3.9620e-003
tblVehicleEF	LDT2	7.7500e-004	8.3200e-004
tblVehicleEF	LDT2	0.04	0.05
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	0.04	0.05

tblVehicleEF	LDT2	0.02	0.03
tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.08	0.11
tblVehicleEF	LDT2	7.0150e-003	8.3450e-003
tblVehicleEF	LDT2	5.0630e-003	6.4440e-003
tblVehicleEF	LDT2	0.87	0.99
tblVehicleEF	LDT2	1.06	1.27
tblVehicleEF	LDT2	384.82	413.17
tblVehicleEF	LDT2	75.43	80.68
tblVehicleEF	LDT2	0.06	0.08
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	2.1490e-003	2.1620e-003
tblVehicleEF	LDT2	2.3760e-003	2.3490e-003
tblVehicleEF	LDT2	1.9770e-003	1.9880e-003
tblVehicleEF	LDT2	2.1840e-003	2.1600e-003
tblVehicleEF	LDT2	0.07	0.07
tblVehicleEF	LDT2	0.10	0.11
tblVehicleEF	LDT2	0.06	0.07
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.07	0.09
tblVehicleEF	LDT2	3.8550e-003	4.1400e-003
tblVehicleEF	LDT2	7.7200e-004	8.2800e-004
tblVehicleEF	LDT2	0.07	0.07
tblVehicleEF	LDT2	0.10	0.11
tblVehicleEF	LDT2	0.06	0.07
tblVehicleEF	LDT2	0.03	0.03

tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.07	0.10
tblVehicleEF	LDT2	6.4820e-003	7.7190e-003
tblVehicleEF	LDT2	5.8190e-003	7.4150e-003
tblVehicleEF	LDT2	0.76	0.87
tblVehicleEF	LDT2	1.27	1.54
tblVehicleEF	LDT2	362.26	388.90
tblVehicleEF	LDT2	75.43	80.68
tblVehicleEF	LDT2	0.07	0.09
tblVehicleEF	LDT2	0.09	0.12
tblVehicleEF	LDT2	2.1490e-003	2.1620e-003
tblVehicleEF	LDT2	2.3760e-003	2.3490e-003
tblVehicleEF	LDT2	1.9770e-003	1.9880e-003
tblVehicleEF	LDT2	2.1840e-003	2.1600e-003
tblVehicleEF	LDT2	0.04	0.05
tblVehicleEF	LDT2	0.10	0.12
tblVehicleEF	LDT2	0.04	0.04
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.07
tblVehicleEF	LDT2	0.08	0.10
tblVehicleEF	LDT2	3.6280e-003	3.8960e-003
tblVehicleEF	LDT2	7.7500e-004	8.3300e-004
tblVehicleEF	LDT2	0.04	0.05
tblVehicleEF	LDT2	0.10	0.12
tblVehicleEF	LDT2	0.04	0.04
tblVehicleEF	LDT2	0.02	0.03
tblVehicleEF	LDT2	0.07	0.07

tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LHD1	5.2860e-003	6.0120e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.16
tblVehicleEF	LHD1	0.75	0.94
tblVehicleEF	LHD1	2.58	3.04
tblVehicleEF	LHD1	8.94	8.91
tblVehicleEF	LHD1	595.21	612.93
tblVehicleEF	LHD1	32.17	34.52
tblVehicleEF	LHD1	0.07	0.07
tblVehicleEF	LHD1	0.86	1.05
tblVehicleEF	LHD1	0.95	1.07
tblVehicleEF	LHD1	8.3300e-004	8.1600e-004
tblVehicleEF	LHD1	0.01	9.9780e-003
tblVehicleEF	LHD1	8.8370e-003	9.4020e-003
tblVehicleEF	LHD1	9.4800e-004	1.0850e-003
tblVehicleEF	LHD1	7.9700e-004	7.8100e-004
tblVehicleEF	LHD1	2.5350e-003	2.4950e-003
tblVehicleEF	LHD1	8.4300e-003	8.9670e-003
tblVehicleEF	LHD1	8.7200e-004	9.9800e-004
tblVehicleEF	LHD1	2.9730e-003	3.3130e-003
tblVehicleEF	LHD1	0.10	0.11
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.8290e-003	1.9910e-003
tblVehicleEF	LHD1	0.06	0.07
tblVehicleEF	LHD1	0.30	0.32

tblVehicleEF	LHD1	0.24	0.29
tblVehicleEF	LHD1	5.8400e-003	6.0260e-003
tblVehicleEF	LHD1	3.7000e-004	4.0200e-004
tblVehicleEF	LHD1	2.9730e-003	3.3130e-003
tblVehicleEF	LHD1	0.10	0.11
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8290e-003	1.9910e-003
tblVehicleEF	LHD1	0.07	0.09
tblVehicleEF	LHD1	0.30	0.32
tblVehicleEF	LHD1	0.27	0.32
tblVehicleEF	LHD1	5.2860e-003	6.0120e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.16
tblVehicleEF	LHD1	0.76	0.96
tblVehicleEF	LHD1	2.46	2.90
tblVehicleEF	LHD1	8.94	8.91
tblVehicleEF	LHD1	595.21	612.93
tblVehicleEF	LHD1	32.17	34.52
tblVehicleEF	LHD1	0.07	0.07
tblVehicleEF	LHD1	0.81	0.98
tblVehicleEF	LHD1	0.91	1.03
tblVehicleEF	LHD1	8.3300e-004	8.1600e-004
tblVehicleEF	LHD1	0.01	9.9780e-003
tblVehicleEF	LHD1	8.8370e-003	9.4020e-003
tblVehicleEF	LHD1	9.4800e-004	1.0850e-003
tblVehicleEF	LHD1	7.9700e-004	7.8100e-004

tblVehicleEF	LHD1	2.5350e-003	2.4950e-003
tblVehicleEF	LHD1	8.4300e-003	8.9670e-003
tblVehicleEF	LHD1	8.7200e-004	9.9800e-004
tblVehicleEF	LHD1	4.4450e-003	4.9680e-003
tblVehicleEF	LHD1	0.10	0.11
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	2.5600e-003	2.8120e-003
tblVehicleEF	LHD1	0.06	0.07
tblVehicleEF	LHD1	0.29	0.31
tblVehicleEF	LHD1	0.23	0.28
tblVehicleEF	LHD1	5.8400e-003	6.0270e-003
tblVehicleEF	LHD1	3.6700e-004	3.9900e-004
tblVehicleEF	LHD1	4.4450e-003	4.9680e-003
tblVehicleEF	LHD1	0.10	0.11
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	2.5600e-003	2.8120e-003
tblVehicleEF	LHD1	0.08	0.09
tblVehicleEF	LHD1	0.29	0.31
tblVehicleEF	LHD1	0.26	0.31
tblVehicleEF	LHD1	5.2860e-003	6.0120e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.16
tblVehicleEF	LHD1	0.74	0.94
tblVehicleEF	LHD1	2.59	3.06
tblVehicleEF	LHD1	8.94	8.91
tblVehicleEF	LHD1	595.21	612.93

tblVehicleEF	LHD1	32.17	34.52
tblVehicleEF	LHD1	0.07	0.07
tblVehicleEF	LHD1	0.85	1.03
tblVehicleEF	LHD1	0.95	1.08
tblVehicleEF	LHD1	8.3300e-004	8.1600e-004
tblVehicleEF	LHD1	0.01	9.9780e-003
tblVehicleEF	LHD1	8.8370e-003	9.4020e-003
tblVehicleEF	LHD1	9.4800e-004	1.0850e-003
tblVehicleEF	LHD1	7.9700e-004	7.8100e-004
tblVehicleEF	LHD1	2.5350e-003	2.4950e-003
tblVehicleEF	LHD1	8.4300e-003	8.9670e-003
tblVehicleEF	LHD1	8.7200e-004	9.9800e-004
tblVehicleEF	LHD1	3.1110e-003	3.5020e-003
tblVehicleEF	LHD1	0.11	0.12
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.7990e-003	1.9650e-003
tblVehicleEF	LHD1	0.06	0.07
tblVehicleEF	LHD1	0.32	0.34
tblVehicleEF	LHD1	0.25	0.30
tblVehicleEF	LHD1	5.8400e-003	6.0260e-003
tblVehicleEF	LHD1	3.7000e-004	4.0200e-004
tblVehicleEF	LHD1	3.1110e-003	3.5020e-003
tblVehicleEF	LHD1	0.11	0.12
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.7990e-003	1.9650e-003
tblVehicleEF	LHD1	0.07	0.09
tblVehicleEF	LHD1	0.32	0.34

tblVehicleEF	LHD1	0.27	0.32
tblVehicleEF	LHD2	3.7460e-003	4.3410e-003
tblVehicleEF	LHD2	3.7700e-003	5.0230e-003
tblVehicleEF	LHD2	7.4580e-003	9.9030e-003
tblVehicleEF	LHD2	0.13	0.13
tblVehicleEF	LHD2	0.31	0.39
tblVehicleEF	LHD2	1.26	1.51
tblVehicleEF	LHD2	13.57	13.55
tblVehicleEF	LHD2	610.80	625.73
tblVehicleEF	LHD2	26.97	28.89
tblVehicleEF	LHD2	0.09	0.10
tblVehicleEF	LHD2	0.55	0.76
tblVehicleEF	LHD2	0.50	0.61
tblVehicleEF	LHD2	1.1440e-003	1.1760e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	8.4330e-003	9.3050e-003
tblVehicleEF	LHD2	4.4100e-004	5.0600e-004
tblVehicleEF	LHD2	1.0950e-003	1.1250e-003
tblVehicleEF	LHD2	2.6630e-003	2.6430e-003
tblVehicleEF	LHD2	8.0540e-003	8.8870e-003
tblVehicleEF	LHD2	4.0500e-004	4.6500e-004
tblVehicleEF	LHD2	1.0290e-003	1.2670e-003
tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	6.8900e-004	8.0900e-004
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.07	0.10

tblVehicleEF	LHD2	0.10	0.13
tblVehicleEF	LHD2	5.9490e-003	6.1010e-003
tblVehicleEF	LHD2	2.9200e-004	3.1600e-004
tblVehicleEF	LHD2	1.0290e-003	1.2670e-003
tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	6.8900e-004	8.0900e-004
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.07	0.10
tblVehicleEF	LHD2	0.11	0.15
tblVehicleEF	LHD2	3.7460e-003	4.3410e-003
tblVehicleEF	LHD2	3.8180e-003	5.0980e-003
tblVehicleEF	LHD2	7.2080e-003	9.5540e-003
tblVehicleEF	LHD2	0.13	0.13
tblVehicleEF	LHD2	0.31	0.40
tblVehicleEF	LHD2	1.20	1.44
tblVehicleEF	LHD2	13.57	13.55
tblVehicleEF	LHD2	610.80	625.73
tblVehicleEF	LHD2	26.97	28.89
tblVehicleEF	LHD2	0.09	0.10
tblVehicleEF	LHD2	0.52	0.72
tblVehicleEF	LHD2	0.49	0.58
tblVehicleEF	LHD2	1.1440e-003	1.1760e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	8.4330e-003	9.3050e-003
tblVehicleEF	LHD2	4.4100e-004	5.0600e-004
tblVehicleEF	LHD2	1.0950e-003	1.1250e-003

tblVehicleEF	LHD2	2.6630e-003	2.6430e-003
tblVehicleEF	LHD2	8.0540e-003	8.8870e-003
tblVehicleEF	LHD2	4.0500e-004	4.6500e-004
tblVehicleEF	LHD2	1.5320e-003	1.8880e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	9.5700e-004	1.1340e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.07	0.09
tblVehicleEF	LHD2	0.10	0.13
tblVehicleEF	LHD2	5.9490e-003	6.1010e-003
tblVehicleEF	LHD2	2.9100e-004	3.1500e-004
tblVehicleEF	LHD2	1.5320e-003	1.8880e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	9.5700e-004	1.1340e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.07	0.09
tblVehicleEF	LHD2	0.11	0.14
tblVehicleEF	LHD2	3.7460e-003	4.3410e-003
tblVehicleEF	LHD2	3.7580e-003	5.0030e-003
tblVehicleEF	LHD2	7.5080e-003	9.9730e-003
tblVehicleEF	LHD2	0.13	0.13
tblVehicleEF	LHD2	0.31	0.39
tblVehicleEF	LHD2	1.27	1.52
tblVehicleEF	LHD2	13.57	13.55
tblVehicleEF	LHD2	610.80	625.73

tblVehicleEF	LHD2	26.97	28.89
tblVehicleEF	LHD2	0.09	0.10
tblVehicleEF	LHD2	0.54	0.75
tblVehicleEF	LHD2	0.51	0.61
tblVehicleEF	LHD2	1.1440e-003	1.1760e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	8.4330e-003	9.3050e-003
tblVehicleEF	LHD2	4.4100e-004	5.0600e-004
tblVehicleEF	LHD2	1.0950e-003	1.1250e-003
tblVehicleEF	LHD2	2.6630e-003	2.6430e-003
tblVehicleEF	LHD2	8.0540e-003	8.8870e-003
tblVehicleEF	LHD2	4.0500e-004	4.6500e-004
tblVehicleEF	LHD2	1.0410e-003	1.3050e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	6.6600e-004	7.8800e-004
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.08	0.10
tblVehicleEF	LHD2	0.10	0.13
tblVehicleEF	LHD2	5.9490e-003	6.1010e-003
tblVehicleEF	LHD2	2.9200e-004	3.1700e-004
tblVehicleEF	LHD2	1.0410e-003	1.3050e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	6.6600e-004	7.8800e-004
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.08	0.10

tblVehicleEF	LHD2	0.11	0.15
tblVehicleEF	MCY	0.54	0.53
tblVehicleEF	MCY	0.15	0.15
tblVehicleEF	MCY	18.72	19.20
tblVehicleEF	MCY	9.68	9.64
tblVehicleEF	MCY	189.29	188.47
tblVehicleEF	MCY	44.13	44.88
tblVehicleEF	MCY	1.13	1.13
tblVehicleEF	MCY	0.31	0.31
tblVehicleEF	MCY	2.4730e-003	2.3830e-003
tblVehicleEF	MCY	3.6800e-003	3.9570e-003
tblVehicleEF	MCY	2.3100e-003	2.2280e-003
tblVehicleEF	MCY	3.4590e-003	3.7290e-003
tblVehicleEF	MCY	1.06	1.07
tblVehicleEF	MCY	0.62	0.65
tblVehicleEF	MCY	0.64	0.65
tblVehicleEF	MCY	2.58	2.61
tblVehicleEF	MCY	0.58	0.62
tblVehicleEF	MCY	2.04	2.06
tblVehicleEF	MCY	6.5900e-004	6.6700e-004
tblVehicleEF	MCY	1.06	1.07
tblVehicleEF	MCY	0.62	0.65
tblVehicleEF	MCY	0.64	0.65
tblVehicleEF	MCY	3.22	3.25
tblVehicleEF	MCY	0.58	0.62
tblVehicleEF	MCY	2.22	2.24
tblVehicleEF	MCY	0.53	0.52

tblVehicleEF	MCY	0.13	0.13
tblVehicleEF	MCY	18.05	18.48
tblVehicleEF	MCY	8.84	8.82
tblVehicleEF	MCY	189.29	188.47
tblVehicleEF	MCY	44.13	44.88
tblVehicleEF	MCY	0.99	0.99
tblVehicleEF	MCY	0.29	0.29
tblVehicleEF	MCY	2.4730e-003	2.3830e-003
tblVehicleEF	MCY	3.6800e-003	3.9570e-003
tblVehicleEF	MCY	2.3100e-003	2.2280e-003
tblVehicleEF	MCY	3.4590e-003	3.7290e-003
tblVehicleEF	MCY	1.72	1.73
tblVehicleEF	MCY	0.68	0.71
tblVehicleEF	MCY	1.06	1.08
tblVehicleEF	MCY	2.52	2.55
tblVehicleEF	MCY	0.54	0.58
tblVehicleEF	MCY	1.82	1.84
tblVehicleEF	MCY	2.2650e-003	2.2640e-003
tblVehicleEF	MCY	6.3900e-004	6.4700e-004
tblVehicleEF	MCY	1.72	1.73
tblVehicleEF	MCY	0.68	0.71
tblVehicleEF	MCY	1.06	1.08
tblVehicleEF	MCY	3.15	3.17
tblVehicleEF	MCY	0.54	0.58
tblVehicleEF	MCY	1.98	2.00
tblVehicleEF	MCY	0.54	0.54
tblVehicleEF	MCY	0.15	0.15

tblVehicleEF	MCY	18.82	19.30
tblVehicleEF	MCY	9.83	9.78
tblVehicleEF	MCY	189.29	188.47
tblVehicleEF	MCY	44.13	44.88
tblVehicleEF	MCY	1.10	1.11
tblVehicleEF	MCY	0.31	0.31
tblVehicleEF	MCY	2.4730e-003	2.3830e-003
tblVehicleEF	MCY	3.6800e-003	3.9570e-003
tblVehicleEF	MCY	2.3100e-003	2.2280e-003
tblVehicleEF	MCY	3.4590e-003	3.7290e-003
tblVehicleEF	MCY	1.15	1.16
tblVehicleEF	MCY	0.80	0.84
tblVehicleEF	MCY	0.61	0.62
tblVehicleEF	MCY	2.59	2.62
tblVehicleEF	MCY	0.67	0.71
tblVehicleEF	MCY	2.08	2.10
tblVehicleEF	MCY	6.6300e-004	6.7100e-004
tblVehicleEF	MCY	1.15	1.16
tblVehicleEF	MCY	0.80	0.84
tblVehicleEF	MCY	0.61	0.62
tblVehicleEF	MCY	3.23	3.26
tblVehicleEF	MCY	0.67	0.71
tblVehicleEF	MCY	2.26	2.29
tblVehicleEF	MDV	0.01	0.02
tblVehicleEF	MDV	0.01	0.02
tblVehicleEF	MDV	1.21	1.56
tblVehicleEF	MDV	2.22	2.79

tblVehicleEF	MDV	495.22	528.65
tblVehicleEF	MDV	99.91	106.35
tblVehicleEF	MDV	0.13	0.17
tblVehicleEF	MDV	0.19	0.25
tblVehicleEF	MDV	2.2990e-003	2.4280e-003
tblVehicleEF	MDV	2.4650e-003	2.5830e-003
tblVehicleEF	MDV	2.1190e-003	2.2400e-003
tblVehicleEF	MDV	2.2660e-003	2.3780e-003
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.15	0.16
tblVehicleEF	MDV	0.07	0.07
tblVehicleEF	MDV	0.03	0.04
tblVehicleEF	MDV	0.09	0.09
tblVehicleEF	MDV	0.17	0.22
tblVehicleEF	MDV	4.9590e-003	5.2990e-003
tblVehicleEF	MDV	1.0380e-003	1.1130e-003
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.15	0.16
tblVehicleEF	MDV	0.07	0.07
tblVehicleEF	MDV	0.04	0.06
tblVehicleEF	MDV	0.09	0.09
tblVehicleEF	MDV	0.18	0.24
tblVehicleEF	MDV	0.01	0.02
tblVehicleEF	MDV	0.01	0.01
tblVehicleEF	MDV	1.32	1.69
tblVehicleEF	MDV	1.90	2.39
tblVehicleEF	MDV	516.89	551.85

tblVehicleEF	MDV	99.91	106.35
tblVehicleEF	MDV	0.11	0.15
tblVehicleEF	MDV	0.18	0.23
tblVehicleEF	MDV	2.2990e-003	2.4280e-003
tblVehicleEF	MDV	2.4650e-003	2.5830e-003
tblVehicleEF	MDV	2.1190e-003	2.2400e-003
tblVehicleEF	MDV	2.2660e-003	2.3780e-003
tblVehicleEF	MDV	0.10	0.11
tblVehicleEF	MDV	0.15	0.17
tblVehicleEF	MDV	0.09	0.10
tblVehicleEF	MDV	0.03	0.05
tblVehicleEF	MDV	0.08	0.08
tblVehicleEF	MDV	0.15	0.19
tblVehicleEF	MDV	5.1770e-003	5.5330e-003
tblVehicleEF	MDV	1.0320e-003	1.1050e-003
tblVehicleEF	MDV	0.10	0.11
tblVehicleEF	MDV	0.15	0.17
tblVehicleEF	MDV	0.09	0.10
tblVehicleEF	MDV	0.05	0.06
tblVehicleEF	MDV	0.08	0.08
tblVehicleEF	MDV	0.16	0.21
tblVehicleEF	MDV	0.01	0.01
tblVehicleEF	MDV	0.01	0.02
tblVehicleEF	MDV	1.17	1.52
tblVehicleEF	MDV	2.29	2.88
tblVehicleEF	MDV	487.26	520.14
tblVehicleEF	MDV	99.91	106.35

tblVehicleEF	MDV	0.13	0.17
tblVehicleEF	MDV	0.20	0.26
tblVehicleEF	MDV	2.2990e-003	2.4280e-003
tblVehicleEF	MDV	2.4650e-003	2.5830e-003
tblVehicleEF	MDV	2.1190e-003	2.2400e-003
tblVehicleEF	MDV	2.2660e-003	2.3780e-003
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.16	0.17
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.03	0.04
tblVehicleEF	MDV	0.10	0.11
tblVehicleEF	MDV	0.17	0.22
tblVehicleEF	MDV	4.8790e-003	5.2130e-003
tblVehicleEF	MDV	1.0390e-003	1.1140e-003
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.16	0.17
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.04	0.06
tblVehicleEF	MDV	0.10	0.11
tblVehicleEF	MDV	0.19	0.24
tblVehicleEF	MH	0.02	0.04
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	1.76	2.77
tblVehicleEF	MH	5.23	6.41
tblVehicleEF	MH	1,125.05	1,135.33
tblVehicleEF	MH	59.88	61.01
tblVehicleEF	MH	1.00	1.17

tblVehicleEF	MH	0.75	0.85
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.0430e-003	1.2190e-003
tblVehicleEF	MH	3.2050e-003	3.1990e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	9.5900e-004	1.1210e-003
tblVehicleEF	MH	0.84	1.07
tblVehicleEF	MH	0.06	0.08
tblVehicleEF	MH	0.36	0.45
tblVehicleEF	MH	0.07	0.10
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	0.30	0.36
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.9000e-004	7.2200e-004
tblVehicleEF	MH	0.84	1.07
tblVehicleEF	MH	0.06	0.08
tblVehicleEF	MH	0.36	0.45
tblVehicleEF	MH	0.10	0.14
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	0.33	0.40
tblVehicleEF	MH	0.02	0.04
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	1.81	2.85
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tblVehicleEF	MH	1,125.05	1,135.33
tblVehicleEF	MH	59.88	61.01

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tblVehicleEF	MH	0.71	0.82
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.0430e-003	1.2190e-003
tblVehicleEF	MH	3.2050e-003	3.1990e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	9.5900e-004	1.1210e-003
tblVehicleEF	MH	1.24	1.58
tblVehicleEF	MH	0.06	0.08
tblVehicleEF	MH	0.51	0.65
tblVehicleEF	MH	0.07	0.11
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	0.29	0.35
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.8400e-004	7.1500e-004
tblVehicleEF	MH	1.24	1.58
tblVehicleEF	MH	0.06	0.08
tblVehicleEF	MH	0.51	0.65
tblVehicleEF	MH	0.10	0.15
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	0.31	0.38
tblVehicleEF	MH	0.02	0.04
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	1.75	2.74
tblVehicleEF	MH	5.28	6.46
tblVehicleEF	MH	1,125.05	1,135.33

tblVehicleEF	MH	59.88	61.01
tblVehicleEF	MH	0.98	1.15
tblVehicleEF	MH	0.75	0.86
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.0430e-003	1.2190e-003
tblVehicleEF	MH	3.2050e-003	3.1990e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	9.5900e-004	1.1210e-003
tblVehicleEF	MH	0.95	1.21
tblVehicleEF	MH	0.07	0.09
tblVehicleEF	MH	0.37	0.46
tblVehicleEF	MH	0.07	0.10
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	0.30	0.37
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.9000e-004	7.2200e-004
tblVehicleEF	MH	0.95	1.21
tblVehicleEF	MH	0.07	0.09
tblVehicleEF	MH	0.37	0.46
tblVehicleEF	MH	0.10	0.14
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	0.33	0.40
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tblVehicleEF	MHD	3.8910e-003	5.7010e-003
tblVehicleEF	MHD	0.05	0.05
tblVehicleEF	MHD	0.36	0.39

tblVehicleEF	MHD	0.32	0.42
tblVehicleEF	MHD	5.63	6.85
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tblVehicleEF	MHD	9.98	9.82
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tblVehicleEF	MHD	2.8420e-003	5.6410e-003
tblVehicleEF	MHD	8.1400e-004	8.9100e-004
tblVehicleEF	MHD	9.7000e-005	2.7300e-004
tblVehicleEF	MHD	2.7140e-003	5.3920e-003
tblVehicleEF	MHD	7.4900e-004	8.1900e-004
tblVehicleEF	MHD	1.0540e-003	1.2390e-003
tblVehicleEF	MHD	0.04	0.05
tblVehicleEF	MHD	0.02	0.03
tblVehicleEF	MHD	7.0500e-004	7.9100e-004
tblVehicleEF	MHD	0.04	0.05
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.34	0.42
tblVehicleEF	MHD	1.2580e-003	1.2630e-003
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.2700e-004	7.7100e-004
tblVehicleEF	MHD	1.0540e-003	1.2390e-003
tblVehicleEF	MHD	0.04	0.05
tblVehicleEF	MHD	0.04	0.04

tblVehicleEF	MHD	7.0500e-004	7.9100e-004
tblVehicleEF	MHD	0.04	0.06
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.38	0.46
tblVehicleEF	MHD	0.01	0.02
tblVehicleEF	MHD	3.9490e-003	5.7940e-003
tblVehicleEF	MHD	0.04	0.05
tblVehicleEF	MHD	0.26	0.28
tblVehicleEF	MHD	0.32	0.43
tblVehicleEF	MHD	5.34	6.50
tblVehicleEF	MHD	138.27	138.77
tblVehicleEF	MHD	1,141.08	1,155.79
tblVehicleEF	MHD	62.84	65.08
tblVehicleEF	MHD	0.36	0.53
tblVehicleEF	MHD	0.71	1.16
tblVehicleEF	MHD	9.94	9.78
tblVehicleEF	MHD	8.6000e-005	2.4100e-004
tblVehicleEF	MHD	2.8420e-003	5.6410e-003
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tblVehicleEF	MHD	1.5770e-003	1.8580e-003
tblVehicleEF	MHD	0.05	0.05
tblVehicleEF	MHD	0.02	0.03
tblVehicleEF	MHD	9.9000e-004	1.1240e-003
tblVehicleEF	MHD	0.04	0.05

tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.33	0.40
tblVehicleEF	MHD	1.3310e-003	1.3360e-003
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.2200e-004	7.6500e-004
tblVehicleEF	MHD	1.5770e-003	1.8580e-003
tblVehicleEF	MHD	0.05	0.05
tblVehicleEF	MHD	0.03	0.04
tblVehicleEF	MHD	9.9000e-004	1.1240e-003
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tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.36	0.44
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	3.8750e-003	5.6760e-003
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tblVehicleEF	MHD	0.50	0.53
tblVehicleEF	MHD	0.32	0.42
tblVehicleEF	MHD	5.68	6.91
tblVehicleEF	MHD	119.87	120.30
tblVehicleEF	MHD	1,141.08	1,155.79
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tblVehicleEF	MHD	0.74	1.21
tblVehicleEF	MHD	9.99	9.83
tblVehicleEF	MHD	1.2400e-004	3.4800e-004
tblVehicleEF	MHD	2.8420e-003	5.6410e-003
tblVehicleEF	MHD	8.1400e-004	8.9100e-004

tblVehicleEF	MHD	1.1800e-004	3.3300e-004
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tblVehicleEF	MHD	7.4900e-004	8.1900e-004
tblVehicleEF	MHD	1.0750e-003	1.2900e-003
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tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	6.8500e-004	7.7500e-004
tblVehicleEF	MHD	0.04	0.05
tblVehicleEF	MHD	0.02	0.03
tblVehicleEF	MHD	0.35	0.42
tblVehicleEF	MHD	1.1580e-003	1.1630e-003
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.2800e-004	7.7200e-004
tblVehicleEF	MHD	1.0750e-003	1.2900e-003
tblVehicleEF	MHD	0.05	0.05
tblVehicleEF	MHD	0.04	0.04
tblVehicleEF	MHD	6.8500e-004	7.7500e-004
tblVehicleEF	MHD	0.04	0.06
tblVehicleEF	MHD	0.02	0.03
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tblVehicleEF	OBUS	6.0280e-003	8.8720e-003
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tblVehicleEF	OBUS	0.25	0.29
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tblVehicleEF	OBUS	101.82	111.80

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tblVehicleEF	OBUS	2.52	2.63
tblVehicleEF	OBUS	2.0000e-005	2.0400e-004
tblVehicleEF	OBUS	2.6330e-003	8.7020e-003
tblVehicleEF	OBUS	8.2900e-004	7.8900e-004
tblVehicleEF	OBUS	1.9000e-005	1.9500e-004
tblVehicleEF	OBUS	2.5030e-003	8.3100e-003
tblVehicleEF	OBUS	7.6200e-004	7.2500e-004
tblVehicleEF	OBUS	1.4160e-003	1.4710e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.03	0.04
tblVehicleEF	OBUS	7.6700e-004	7.7800e-004
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	0.04	0.04
tblVehicleEF	OBUS	0.32	0.36
tblVehicleEF	OBUS	9.8300e-004	1.0790e-003
tblVehicleEF	OBUS	0.01	0.01
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tblVehicleEF	OBUS	1.4160e-003	1.4710e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.05	0.06
tblVehicleEF	OBUS	7.6700e-004	7.7800e-004
tblVehicleEF	OBUS	0.05	0.08
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tblVehicleEF	OBUS	6.1370e-003	9.0250e-003
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tblVehicleEF	OBUS	0.24	0.27
tblVehicleEF	OBUS	0.45	0.61
tblVehicleEF	OBUS	4.89	5.43
tblVehicleEF	OBUS	106.89	117.45
tblVehicleEF	OBUS	1,246.68	1,266.65
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tblVehicleEF	OBUS	0.22	0.60
tblVehicleEF	OBUS	0.64	1.63
tblVehicleEF	OBUS	2.49	2.59
tblVehicleEF	OBUS	1.7000e-005	1.7200e-004
tblVehicleEF	OBUS	2.6330e-003	8.7020e-003
tblVehicleEF	OBUS	8.2900e-004	7.8900e-004
tblVehicleEF	OBUS	1.6000e-005	1.6400e-004
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tblVehicleEF	OBUS	7.6200e-004	7.2500e-004
tblVehicleEF	OBUS	2.0710e-003	2.1550e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.03	0.04
tblVehicleEF	OBUS	1.0770e-003	1.1010e-003
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tblVehicleEF	OBUS	2.6330e-003	8.7020e-003
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tblVehicleEF	OBUS	2.3000e-005	2.3700e-004
tblVehicleEF	OBUS	2.5030e-003	8.3100e-003
tblVehicleEF	OBUS	7.6200e-004	7.2500e-004

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tblVehicleEF	OBUS	0.03	0.04
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tblVehicleEF	OBUS	0.33	0.36
tblVehicleEF	OBUS	9.1700e-004	1.0040e-003
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tblVehicleEF	OBUS	7.7000e-004	7.8500e-004
tblVehicleEF	OBUS	1.4400e-003	1.5180e-003
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tblVehicleEF	OBUS	0.05	0.06
tblVehicleEF	OBUS	7.4400e-004	7.5800e-004
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tblVehicleEF	SBUS	0.06	0.07
tblVehicleEF	SBUS	8.28	8.04
tblVehicleEF	SBUS	0.67	0.79
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tblVehicleEF	SBUS	1,105.31	1,136.99
tblVehicleEF	SBUS	1,070.53	1,088.61
tblVehicleEF	SBUS	56.44	53.57
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tblVehicleEF	SBUS	7.7650e-003	0.01
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tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	7.8400e-004	7.1700e-004
tblVehicleEF	SBUS	3.3720e-003	3.3870e-003
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tblVehicleEF	SBUS	0.99	0.97
tblVehicleEF	SBUS	1.8240e-003	1.7160e-003
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tblVehicleEF	SBUS	6.8420e-003	9.0250e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	8.5300e-004	7.8000e-004
tblVehicleEF	SBUS	6.5460e-003	8.6350e-003
tblVehicleEF	SBUS	2.6580e-003	2.6770e-003
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	7.8400e-004	7.1700e-004
tblVehicleEF	SBUS	4.9610e-003	4.9940e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	0.98	0.97
tblVehicleEF	SBUS	2.5750e-003	2.4540e-003
tblVehicleEF	SBUS	0.10	0.11
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.34	0.35

tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	6.6600e-004	6.4200e-004
tblVehicleEF	SBUS	4.9610e-003	4.9940e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	1.42	1.39
tblVehicleEF	SBUS	2.5750e-003	2.4540e-003
tblVehicleEF	SBUS	0.12	0.13
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.37	0.38
tblVehicleEF	SBUS	0.84	0.86
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.06	0.07
tblVehicleEF	SBUS	8.43	8.21
tblVehicleEF	SBUS	0.66	0.78
tblVehicleEF	SBUS	7.40	7.78
tblVehicleEF	SBUS	1,037.46	1,065.38
tblVehicleEF	SBUS	1,070.53	1,088.61
tblVehicleEF	SBUS	56.44	53.57
tblVehicleEF	SBUS	8.13	9.47
tblVehicleEF	SBUS	3.74	4.47
tblVehicleEF	SBUS	11.85	12.43
tblVehicleEF	SBUS	9.8760e-003	0.01
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	8.5300e-004	7.8000e-004
tblVehicleEF	SBUS	9.4480e-003	0.01

tblVehicleEF	SBUS	2.6580e-003	2.6770e-003
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	7.8400e-004	7.1700e-004
tblVehicleEF	SBUS	3.3940e-003	3.5050e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	0.99	0.97
tblVehicleEF	SBUS	1.7490e-003	1.6510e-003
tblVehicleEF	SBUS	0.10	0.11
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.39	0.40
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	6.9200e-004	6.7000e-004
tblVehicleEF	SBUS	3.3940e-003	3.5050e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	1.43	1.40
tblVehicleEF	SBUS	1.7490e-003	1.6510e-003
tblVehicleEF	SBUS	0.12	0.13
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.42	0.44
tblVehicleEF	UBUS	2.44	2.78
tblVehicleEF	UBUS	0.05	0.05
tblVehicleEF	UBUS	10.68	11.79
tblVehicleEF	UBUS	8.84	8.90
tblVehicleEF	UBUS	1,951.45	1,987.48
tblVehicleEF	UBUS	100.38	92.58
tblVehicleEF	UBUS	9.33	10.68

tblVehicleEF	UBUS	15.09	15.66
tblVehicleEF	UBUS	0.60	0.62
tblVehicleEF	UBUS	0.12	0.14
tblVehicleEF	UBUS	1.1360e-003	1.0320e-003
tblVehicleEF	UBUS	0.26	0.27
tblVehicleEF	UBUS	0.12	0.13
tblVehicleEF	UBUS	1.0450e-003	9.4900e-004
tblVehicleEF	UBUS	4.1100e-003	4.1600e-003
tblVehicleEF	UBUS	0.07	0.07
tblVehicleEF	UBUS	2.4100e-003	2.3580e-003
tblVehicleEF	UBUS	0.79	0.90
tblVehicleEF	UBUS	0.02	0.02
tblVehicleEF	UBUS	0.68	0.67
tblVehicleEF	UBUS	9.8060e-003	9.9290e-003
tblVehicleEF	UBUS	1.1630e-003	1.0860e-003
tblVehicleEF	UBUS	4.1100e-003	4.1600e-003
tblVehicleEF	UBUS	0.07	0.07
tblVehicleEF	UBUS	2.4100e-003	2.3580e-003
tblVehicleEF	UBUS	3.32	3.79
tblVehicleEF	UBUS	0.02	0.02
tblVehicleEF	UBUS	0.75	0.73
tblVehicleEF	UBUS	2.44	2.78
tblVehicleEF	UBUS	0.05	0.05
tblVehicleEF	UBUS	10.72	11.84
tblVehicleEF	UBUS	7.66	7.71
tblVehicleEF	UBUS	1,951.45	1,987.48
tblVehicleEF	UBUS	100.38	92.58

tblVehicleEF	UBUS	8.79	10.07
tblVehicleEF	UBUS	15.04	15.61
tblVehicleEF	UBUS	0.60	0.62
tblVehicleEF	UBUS	0.12	0.14
tblVehicleEF	UBUS	1.1360e-003	1.0320e-003
tblVehicleEF	UBUS	0.26	0.27
tblVehicleEF	UBUS	0.12	0.13
tblVehicleEF	UBUS	1.0450e-003	9.4900e-004
tblVehicleEF	UBUS	5.8640e-003	5.9260e-003
tblVehicleEF	UBUS	0.07	0.07
tblVehicleEF	UBUS	3.3120e-003	3.2450e-003
tblVehicleEF	UBUS	0.80	0.91
tblVehicleEF	UBUS	0.02	0.02
tblVehicleEF	UBUS	0.63	0.61
tblVehicleEF	UBUS	9.8070e-003	9.9300e-003
tblVehicleEF	UBUS	1.1430e-003	1.0650e-003
tblVehicleEF	UBUS	5.8640e-003	5.9260e-003
tblVehicleEF	UBUS	0.07	0.07
tblVehicleEF	UBUS	3.3120e-003	3.2450e-003
tblVehicleEF	UBUS	3.33	3.80
tblVehicleEF	UBUS	0.02	0.02
tblVehicleEF	UBUS	0.69	0.67
tblVehicleEF	UBUS	2.44	2.78
tblVehicleEF	UBUS	0.05	0.05
tblVehicleEF	UBUS	10.66	11.77
tblVehicleEF	UBUS	9.05	9.11
tblVehicleEF	UBUS	1,951.45	1,987.48

tblVehicleEF	UBUS	100.38	92.58
tblVehicleEF	UBUS	9.15	10.47
tblVehicleEF	UBUS	15.10	15.67
tblVehicleEF	UBUS	0.60	0.62
tblVehicleEF	UBUS	0.12	0.14
tblVehicleEF	UBUS	1.1360e-003	1.0320e-003
tblVehicleEF	UBUS	0.26	0.27
tblVehicleEF	UBUS	0.12	0.13
tblVehicleEF	UBUS	1.0450e-003	9.4900e-004
tblVehicleEF	UBUS	4.6290e-003	4.7460e-003
tblVehicleEF	UBUS	0.08	0.09
tblVehicleEF	UBUS	2.5090e-003	2.4840e-003
tblVehicleEF	UBUS	0.79	0.90
tblVehicleEF	UBUS	0.03	0.03
tblVehicleEF	UBUS	0.70	0.68
tblVehicleEF	UBUS	9.8060e-003	9.9290e-003
tblVehicleEF	UBUS	1.1670e-003	1.0900e-003
tblVehicleEF	UBUS	4.6290e-003	4.7460e-003
tblVehicleEF	UBUS	0.08	0.09
tblVehicleEF	UBUS	2.5090e-003	2.4840e-003
tblVehicleEF	UBUS	3.31	3.78
tblVehicleEF	UBUS	0.03	0.03
tblVehicleEF	UBUS	0.76	0.75
tblVehicleTrips	ST_TR	1.32	0.00
tblVehicleTrips	SU_TR	0.68	0.00
tblVehicleTrips	WD_TR	6.97	0.08
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00

tblWater	ElectricityIntensityFactorToDistribute	1,272.00	0.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	0.00
tblWater	ElectricityIntensityFactorToTreat	111.00	0.00
tblWater	IndoorWaterUseRate	1,156,250.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	1.6786	13.5506	14.3287	0.0250	0.8981	0.9071	1.8052	0.1520	0.8480	1.0000	0.0000	2,422.2359	2,422.2359	0.5518	0.0000	2,436.0302
2022	1.4159	11.9567	14.0598	0.0248	0.4918	0.6237	1.1155	0.1304	0.5819	0.7124	0.0000	2,406.1863	2,406.1863	0.5487	0.0000	2,419.9037
Maximum	**1.6786**	**13.5506**	**14.3287**	**0.0250**	**0.8981**	**0.9071**	**1.8052**	**0.1520**	**0.8480**	**1.0000**	**0.0000**	**2,422.2359**	**2,422.2359**	**0.5518**	**0.0000**	**2,436.0302**

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					
2021	1.6786	13.5506	14.3287	0.0250	0.5587	0.9071	1.4659	0.1304	0.8480	0.9626	0.0000	2,422.2359	2,422.2359	0.5518	0.0000	2,436.0302
2022	1.4159	11.9567	14.0598	0.0248	0.4918	0.6237	1.1155	0.1304	0.5819	0.7124	0.0000	2,406.1863	2,406.1863	0.5487	0.0000	2,419.9037
Maximum	**1.6786**	**13.5506**	**14.3287**	**0.0250**	**0.5587**	**0.9071**	**1.4659**	**0.1304**	**0.8480**	**0.9626**	**0.0000**	**2,422.2359**	**2,422.2359**	**0.5518**	**0.0000**	**2,436.0302**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**24.42**	**0.00**	**11.62**	**7.63**	**0.00**	**2.18**	**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	0.1118	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Energy	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Mobile	8.6000e-004	4.4400e-003	0.0126	4.0000e-005	3.7700e-003	4.0000e-005	3.8100e-003	1.0100e-003	4.0000e-005	1.0400e-003		4.5543	4.5543	2.4000e-004		4.5603
Total	**0.1153**	**0.0288**	**0.0335**	**1.9000e-004**	**3.7700e-003**	**1.8900e-003**	**5.6600e-003**	**1.0100e-003**	**1.8900e-003**	**2.8900e-003**		**33.7254**	**33.7254**	**8.0000e-004**	**5.3000e-004**	**33.9049**

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	0.1118	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Energy	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Mobile	8.6000e-004	4.4400e-003	0.0126	4.0000e-005	3.7700e-003	4.0000e-005	3.8100e-003	1.0100e-003	4.0000e-005	1.0400e-003		4.5543	4.5543	2.4000e-004		4.5603
Total	**0.1153**	**0.0288**	**0.0335**	**1.9000e-004**	**3.7700e-003**	**1.8900e-003**	**5.6600e-003**	**1.0100e-003**	**1.8900e-003**	**2.8900e-003**		**33.7254**	**33.7254**	**8.0000e-004**	**5.3000e-004**	**33.9049**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	12/6/2021	12/17/2021	5	10	
2	Site Preparation	Site Preparation	12/18/2021	12/20/2021	5	1	
3	Building Construction	Building Construction	12/21/2021	5/9/2022	5	100	

Acres of Grading (Site Preparation Phase): 0.5

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
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Generator Sets	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	1.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Site Preparation	Generator Sets	1	8.00	84	0.74
Site Preparation	Graders	1	8.00	84	0.74
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Other Construction Equipment	1	8.00	172	0.42
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Welders	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	30.00	0.00	14.00	14.70	6.90	12.40	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	30.00	1.00	0.00	14.70	6.90	12.40	LD_Mix	HDT_Mix	HHDT
Building Construction	6	44.00	0.00	0.00	14.70	6.90	12.40	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 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					0.0809	0.0000	0.0809	0.0123	0.0000	0.0123			0.0000			0.0000
Off-Road	0.9961	8.8430	9.3791	0.0159		0.4831	0.4831		0.4710	0.4710		1,514.4234	1,514.4234	0.1711		1,518.7007
Total	**0.9961**	**8.8430**	**9.3791**	**0.0159**	**0.0809**	**0.4831**	**0.5640**	**0.0123**	**0.4710**	**0.4833**		**1,514.4234**	**1,514.4234**	**0.1711**		**1,518.7007**

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	8.3600e-003	0.2834	0.0662	7.1000e-004	0.0152	7.5000e-004	0.0159	4.1600e-003	7.2000e-004	4.8800e-003		77.5003	77.5003	6.1000e-003		77.6528
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	0.1431	0.0978	1.1048	3.2300e-003	0.3353	2.7100e-003	0.3380	0.0889	2.5000e-003	0.0914		321.6753	321.6753	9.4700e-003		321.9120
Total	**0.1514**	**0.3812**	**1.1710**	**3.9400e-003**	**0.3505**	**3.4600e-003**	**0.3540**	**0.0931**	**3.2200e-003**	**0.0963**		**399.1756**	**399.1756**	**0.0156**		**399.5648**

3.2 Demolition - 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					0.0316	0.0000	0.0316	4.7800e-003	0.0000	4.7800e-003			0.0000			0.0000
Off-Road	0.9961	8.8430	9.3791	0.0159		0.4831	0.4831		0.4710	0.4710	0.0000	1,514.4234	1,514.4234	0.1711		1,518.7007
Total	**0.9961**	**8.8430**	**9.3791**	**0.0159**	**0.0316**	**0.4831**	**0.5146**	**4.7800e-003**	**0.4710**	**0.4758**	**0.0000**	**1,514.4234**	**1,514.4234**	**0.1711**		**1,518.7007**

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	8.3600e-003	0.2834	0.0662	7.1000e-004	0.0152	7.5000e-004	0.0159	4.1600e-003	7.2000e-004	4.8800e-003		77.5003	77.5003	6.1000e-003		77.6528
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	0.1431	0.0978	1.1048	3.2300e-003	0.3353	2.7100e-003	0.3380	0.0889	2.5000e-003	0.0914		321.6753	321.6753	9.4700e-003		321.9120
Total	**0.1514**	**0.3812**	**1.1710**	**3.9400e-003**	**0.3505**	**3.4600e-003**	**0.3540**	**0.0931**	**3.2200e-003**	**0.0963**		**399.1756**	**399.1756**	**0.0156**		**399.5648**

3.3 Site Preparation - 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					0.5564	0.0000	0.5564	0.0612	0.0000	0.0612			0.0000			0.0000
Off-Road	1.5323	12.8736	10.8255	0.0150		0.9042	0.9042		0.8453	0.8453		1,438.1831	1,438.1831	0.2954		1,445.5688
Total	**1.5323**	**12.8736**	**10.8255**	**0.0150**	**0.5564**	**0.9042**	**1.4606**	**0.0612**	**0.8453**	**0.9065**		**1,438.1831**	**1,438.1831**	**0.2954**		**1,445.5688**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.1900e-003	0.0969	0.0281	2.5000e-004	6.4000e-003	2.0000e-004	6.6100e-003	1.8400e-003	2.0000e-004	2.0400e-003		26.7346	26.7346	1.7300e-003		26.7777
Worker	0.1431	0.0978	1.1048	3.2300e-003	0.3353	2.7100e-003	0.3380	0.0889	2.5000e-003	0.0914		321.6753	321.6753	9.4700e-003		321.9120
Total	**0.1462**	**0.1947**	**1.1329**	**3.4800e-003**	**0.3417**	**2.9100e-003**	**0.3447**	**0.0908**	**2.7000e-003**	**0.0935**		**348.4099**	**348.4099**	**0.0112**		**348.6897**

3.3 Site Preparation - 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					0.2170	0.0000	0.2170	0.0239	0.0000	0.0239			0.0000			0.0000
Off-Road	1.5323	12.8736	10.8255	0.0150		0.9042	0.9042		0.8453	0.8453	0.0000	1,438.1831	1,438.1831	0.2954		1,445.5688
Total	**1.5323**	**12.8736**	**10.8255**	**0.0150**	**0.2170**	**0.9042**	**1.1212**	**0.0239**	**0.8453**	**0.8692**	**0.0000**	**1,438.1831**	**1,438.1831**	**0.2954**		**1,445.5688**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.1900e-003	0.0969	0.0281	2.5000e-004	6.4000e-003	2.0000e-004	6.6100e-003	1.8400e-003	2.0000e-004	2.0400e-003		26.7346	26.7346	1.7300e-003		26.7777
Worker	0.1431	0.0978	1.1048	3.2300e-003	0.3353	2.7100e-003	0.3380	0.0889	2.5000e-003	0.0914		321.6753	321.6753	9.4700e-003		321.9120
Total	**0.1462**	**0.1947**	**1.1329**	**3.4800e-003**	**0.3417**	**2.9100e-003**	**0.3447**	**0.0908**	**2.7000e-003**	**0.0935**		**348.4099**	**348.4099**	**0.0112**		**348.6897**

3.4 Building Construction - 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					
Off-Road	1.3580	13.4071	12.7084	0.0202		0.7303	0.7303		0.6812	0.6812		1,950.4454	1,950.4454	0.5379		1,963.8927
Total	**1.3580**	**13.4071**	**12.7084**	**0.0202**		**0.7303**	**0.7303**		**0.6812**	**0.6812**		**1,950.4454**	**1,950.4454**	**0.5379**		**1,963.8927**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2098	0.1435	1.6203	4.7400e-003	0.4918	3.9700e-003	0.4958	0.1304	3.6600e-003	0.1341		471.7905	471.7905	0.0139		472.1376
Total	**0.2098**	**0.1435**	**1.6203**	**4.7400e-003**	**0.4918**	**3.9700e-003**	**0.4958**	**0.1304**	**3.6600e-003**	**0.1341**		**471.7905**	**471.7905**	**0.0139**		**472.1376**

3.4 Building Construction - 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					
Off-Road	1.3580	13.4071	12.7084	0.0202		0.7303	0.7303		0.6812	0.6812	0.0000	1,950.4454	1,950.4454	0.5379		1,963.8927
Total	**1.3580**	**13.4071**	**12.7084**	**0.0202**		**0.7303**	**0.7303**		**0.6812**	**0.6812**	**0.0000**	**1,950.4454**	**1,950.4454**	**0.5379**		**1,963.8927**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2098	0.1435	1.6203	4.7400e-003	0.4918	3.9700e-003	0.4958	0.1304	3.6600e-003	0.1341		471.7905	471.7905	0.0139		472.1376
Total	**0.2098**	**0.1435**	**1.6203**	**4.7400e-003**	**0.4918**	**3.9700e-003**	**0.4958**	**0.1304**	**3.6600e-003**	**0.1341**		**471.7905**	**471.7905**	**0.0139**		**472.1376**

3.4 Building Construction - 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					
Off-Road	1.2189	11.8271	12.5674	0.0202		0.6199	0.6199		0.5784	0.5784		1,950.9757	1,950.9757	0.5362		1,964.3798
Total	**1.2189**	**11.8271**	**12.5674**	**0.0202**		**0.6199**	**0.6199**		**0.5784**	**0.5784**		**1,950.9757**	**1,950.9757**	**0.5362**		**1,964.3798**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1971	0.1296	1.4924	4.5700e-003	0.4918	3.8500e-003	0.4957	0.1304	3.5500e-003	0.1340		455.2106	455.2106	0.0125		455.5239
Total	**0.1971**	**0.1296**	**1.4924**	**4.5700e-003**	**0.4918**	**3.8500e-003**	**0.4957**	**0.1304**	**3.5500e-003**	**0.1340**		**455.2106**	**455.2106**	**0.0125**		**455.5239**

3.4 Building Construction - 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					
Off-Road	1.2189	11.8271	12.5674	0.0202		0.6199	0.6199		0.5784	0.5784	0.0000	1,950.9757	1,950.9757	0.5362		1,964.3798
Total	**1.2189**	**11.8271**	**12.5674**	**0.0202**		**0.6199**	**0.6199**		**0.5784**	**0.5784**	**0.0000**	**1,950.9757**	**1,950.9757**	**0.5362**		**1,964.3798**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1971	0.1296	1.4924	4.5700e-003	0.4918	3.8500e-003	0.4957	0.1304	3.5500e-003	0.1340		455.2106	455.2106	0.0125		455.5239
Total	**0.1971**	**0.1296**	**1.4924**	**4.5700e-003**	**0.4918**	**3.8500e-003**	**0.4957**	**0.1304**	**3.5500e-003**	**0.1340**		**455.2106**	**455.2106**	**0.0125**		**455.5239**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	8.6000e-004	4.4400e-003	0.0126	4.0000e-005	3.7700e-003	4.0000e-005	3.8100e-003	1.0100e-003	4.0000e-005	1.0400e-003		4.5543	4.5543	2.4000e-004		4.5603
Unmitigated	8.6000e-004	4.4400e-003	0.0126	4.0000e-005	3.7700e-003	4.0000e-005	3.8100e-003	1.0100e-003	4.0000e-005	1.0400e-003		4.5543	4.5543	2.4000e-004		4.5603

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	0.40	0.00	0.00	1,265	1,265
Total	0.40	0.00	0.00	1,265	1,265

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	16.60	8.40	6.90	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.547192	0.045177	0.202743	0.121510	0.016147	0.006143	0.019743	0.029945	0.002479	0.002270	0.005078	0.000682	0.000891

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive 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	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
NaturalGas Unmitigated	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434

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	247.945	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Total		**2.6700e-003**	**0.0243**	**0.0204**	**1.5000e-004**		**1.8500e-003**	**1.8500e-003**		**1.8500e-003**	**1.8500e-003**		**29.1700**	**29.1700**	**5.6000e-004**	**5.3000e-004**	**29.3434**

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	0.247945	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Total		**2.6700e-003**	**0.0243**	**0.0204**	**1.5000e-004**		**1.8500e-003**	**1.8500e-003**		**1.8500e-003**	**1.8500e-003**		**29.1700**	**29.1700**	**5.6000e-004**	**5.3000e-004**	**29.3434**

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	0.1118	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Unmitigated	0.1118	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-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	0.0127					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0990					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.0000e-005	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Total	**0.1118**	**0.0000**	**5.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.0900e-003**	**1.0900e-003**	**0.0000**		**1.1700e-003**

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	0.0127					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0990					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.0000e-005	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Total	**0.1118**	**0.0000**	**5.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.0900e-003**	**1.0900e-003**	**0.0000**		**1.1700e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX B
Biological Resources Memorandum

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March 13, 2020

Nadia Parker
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Subject: Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System Project, Biological Resources Memorandum

1. INTRODUCTION

The Los Angeles Department of Water and Power (LADWP) proposes to implement the Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System Project (proposed project) within its Silver Lake Reservoir Complex (SLRC), which comprises the Silver Lake and Ivanhoe Reservoirs (the reservoirs). This project is being proposed to manage algae growth and reduce related odors at SLRC.

AECOM was retained by LADWP to prepare a biological resource assessment of the proposed project in support of the California Environmental Quality Act (CEQA). This memo summarizes the results of a site survey conducted by AECOM to document existing biological conditions of the proposed project within the SLRC. This report includes the methods used to assess existing biological resources, results of vegetation, wildlife, and habitat evaluations, the list of potential special-status species evaluated, an identification of potential impacts to these resources, and mitigation measures identified to minimize and avoid potential impacts to biological resources.

2. PROJECT DESCRIPTION

2.1 Project Location and Setting

The proposed project would be located within the boundaries of the 127-acre, LADWP-owned SLRC, located in the Silver Lake community of the City of Los Angeles, approximately 5 miles north of downtown Los Angeles. The SLRC is generally bound by Tesla Avenue on the north, Armstrong Avenue and Silver Lake Boulevard on the east, Van Pelt Place on the south, and Silver Lake Drive on the west. Local access to the project site is provided via Silver Lake Boulevard immediately east of the project site; Glendale Boulevard, approximately 0.2-mile east of the project site; Hyperion Avenue, approximately 0.4-mile west of the project site; and Sunset Boulevard, approximately 0.65-mile southwest of the project site. Regional access is provided via Interstate 5 (I-5, Golden State Freeway), approximately 0.5-mile northeast of the project site; U.S. Route 101 (US 101, Hollywood Freeway), approximately 1.4 miles south of the project site; and State Route 110 (SR 110, Pasadena Freeway), approximately 2.15 miles southeast of the project site. Figures 1 and 2 (Attachment A) depict the regional vicinity and project location, respectively.

The SLRC includes the Silver Lake and Ivanhoe Reservoirs, dams, buildings, water and stormwater infrastructure, interior roads, and public recreational facilities. The proposed facilities would be installed within the reservoirs and the area adjacent to the edges of the reservoir within the SLRC in the areas that currently contain other LADWP facilities. The area surrounding the SLRC is characterized by low-rise single and multi-family residential

structures with various commercial uses located along busier roadways in the neighborhood.

2.2 Project Objectives

The objectives of the proposed project are to:

- Comply with the requirements of the SLRC Storage Replacement Project (SRP) Environmental Impact Report
- Install an aeration and recirculation system to ensure full water transfer between both basins and increase the oxygen levels at the bottom of the reservoirs, and properly mix and destratify the water in the reservoirs to minimize stagnation
- Control algal growth and associated odors at the reservoirs

2.3 Construction Scenario

Silver Lake and Ivanhoe Reservoirs require an aeration and recirculation system to ensure that reasonable water quality parameters are met for visual aesthetics and controlling odors. The proposed project would include the installation of a bubble plume aeration system and a recirculation pipe system to ensure oxygenation and destratification of the reservoirs. Project components are depicted in Figure 3. Destratification allows for the mixing of the reservoir water to allow for oxygen levels to be maintained throughout the reservoir. The proposed project would be implemented in two phases as described below.

Phase 1 – Reservoir Aeration

Phase 1 would include installation of an aeration system consisting of air blowers, air piping to each of the reservoirs, bubble plume system diffusers in each of the reservoirs, and aftercoolers. Two air blowers would be installed for each reservoir, including one in continuous operation and one to serve as a backup. The air blowers would be housed in an enclosure with ventilation and sound insulation. The air blower package enclosure would be located inside an existing chlorination building in the northeast portion of the SLRC between the two reservoirs. Each air blower enclosure would consist of a local control panel and electrical power to support the air blowers and appurtenant equipment. Flow rate, air content, equipment's operational status, and pressure values would be monitored for each air blower. The aftercoolers would be located adjacent to the existing chlorination building, and would remove excess heat produced by the aeration system.

The air blowers would supply air via three- and four-inch pipes to a series of diffusing equipment inside each reservoir. After leaving the manifold enclosures, one-inch air piping would be installed along the eastern edges of the reservoirs. One air pipe would run from the air blower enclosure north to the Ivanhoe Reservoir and one air pipe would run south to the Silver Lake Reservoir. Each pipe would connect with diffusing equipment within each of the reservoirs. The diffusing equipment would increase the oxygen levels at the bottom of the reservoir and locally mix the water around it. Each diffusing equipment assembly would consist of a diffuser and a manifold and would be strategically placed across the reservoirs for optimal aeration. Approximately six diffusers would be installed in Ivanhoe Reservoir and 14 diffusers would be installed in Silver Lake Reservoir. This aeration system would discourage algae growth and reduce related odors from anaerobic conditions.

Phase 2 –Recirculation System

Phase 2 would include the installation of a recirculation system consisting of a recirculation pump station, recirculation piping, and inflow from Ivanhoe Reservoir to Silver Lake Reservoir via the existing overflow weir. Additionally, two concrete plugs and approximately 400 feet of new recirculation piping would be installed within Ivanhoe Reservoir. The concrete plugs would be installed at the existing Ivanhoe Bypass and Ivanhoe Inlet Tower, and would contain all recirculating water within the vicinity of the SLRC to avoid potential flooding of the Rowena-Ivanhoe pipeline. The recirculation pump equipment would be installed at the existing Gate 456 structure, which is a fenced gate structure on the northwest corner of Silver Lake Reservoir that was historically used for water bypass when both Silver Lake and Ivanhoe were connected to the potable water system. Two submersible recirculation pumps would be installed along the depths of both Silver Lake and Ivanhoe Reservoirs and within the Gate 456 structure, with one pump on duty and the other on standby during normal operations. Both pumps would have the flexibility to operate simultaneously under special conditions. Suction intake would be located at the south end of the Silver Lake Reservoir along the existing Silver Lake Bypass pipeline and discharge would occur at the north end of Ivanhoe Reservoir. The recirculation piping would be connected to the recirculation pump to transfer water from Silver Lake to Ivanhoe over a partition wall within the Gate 456 structure. Inflow from Ivanhoe Reservoir to Silver Lake Reservoir would occur via the existing weir over the Silver Lake North Dam between the reservoirs.

2.4 Construction Schedule and Procedures

Construction of Phase I is anticipated to begin in November 2020 and take approximately 13 months to complete, concluding in December 2021. Construction of Phase II is anticipated to begin at the end of Phase I and take approximately 16 months to complete, concluding in December 2022. Construction activities would occur Mondays through Friday from 7 a.m. to 3 p.m. Construction vehicle access would be available via the existing driveway at the northeastern corner of the SLRC near the intersection of Tesla Avenue and Armstrong Avenue. It is anticipated that haul trucks and construction workers would travel south to the project site from Sun Valley using Interstate 5 (I-5), then travel south on Riverside Drive to Glendale Boulevard, and then west on Lakewood Avenue to Armstrong Avenue. All construction activities would occur completely within the boundaries of the SLRC. Construction staging and laydown areas would also occur within the SLRC. Construction equipment would remain at the project site for the duration of its use.

Phase 1 – Reservoir Aeration

Construction activities at each reservoir would consist of construction of the aeration header at the existing chlorination building, installation of the pre-assembled air blower enclosures for the aeration system, installation of the pipeline connections, and assembly of the diffusers. As previously discussed, the air blowers for the aeration system would be housed in a sound-insulated enclosure. Site preparation for the enclosure would include demolition of existing concrete slabs, installation of 40 polyvinyl chloride (PVC) conduits, and construction and casting of concrete and equipment pads. The concrete and equipment pads would require the site to be cleared, excavated up to 3 feet, and graded. The enclosure units would be installed within the existing chlorination building behind its concrete walls.

Following construction of the air blower enclosures, air pipes would be installed from the air blowers to diffuser systems at each reservoir. The pipes would be installed underground utilizing trenching and backfilling methods, with the exception of self-weighted lines that would extend within the reservoir. Approximately 1,021 linear feet of pipeline would be required for Ivanhoe Reservoir and approximately 1,076 linear feet of pipeline would be required for Silver Lake Reservoir. As previously discussed, the diffusers would consist of a diffuser and a manifold, which would be strategically placed across the reservoirs for optimal aeration.

After installation of the pipelines and diffuser systems, the existing control panel would be moved from the existing chlorination building to the newly constructed enclosures. The air blowers and associated piping and supports and ventilation system would be installed within the enclosure. Aftercoolers would be located outside of the enclosures, and a sunshade and would be constructed to protect the equipment.

It is anticipated that approximately 1,102 cubic yards of materials would be imported to the project site, including 684 cubic yards of crushed aggregate base, 78 cubic yards of asphalt, 98 cubic yards of concrete, and 233 cubic yards of slurry. Additionally, approximately 1,045 cubic yards of materials would be excavated and exported from the project site, including 982 cubic yards of soil, 35 cubic yards of asphalt, and 28 cubic yards of concrete. Materials required for construction would be stored on site, with the exception of asphalt and concrete.

Construction activities for Phase 1 of the proposed project would require approximately 10 pieces of equipment, including an asphalt paver, backhoe loader, barge, butt fusion machine, crane, front end loader, fork lift, generator, roller, and vibrating plate as well as maintenance and dump trucks. All equipment would be stored on site.

Phase 2 - Recirculation System

Construction activities for Phase 2 include installation of pipeline in Ivanhoe Reservoir, installation of concrete plugs at the existing Ivanhoe Bypass and Ivanhoe Inlet tower, demolition of the existing equipment in the Gate 456 structure, installation of a suction intake on the existing Silver Lake bypass pipeline, and construction of the recirculation pump station within the Gate 456 structure, including a partition wall. Demolition would involve removal of existing electrical and mechanical equipment and an existing concrete slab within the Gate 456 structure.

Prior to installation of the concrete plugs, the water from Ivanhoe Reservoir would be pumped into Silver Lake Reservoir. Following draining of the water, 400 linear feet of pipeline would be placed and casted with concrete within Ivanhoe Reservoir to recirculate water within this reservoir. The concrete plugs would be formed on-site, placed in the Ivanhoe Bypass and then the Ivanhoe Tower Inlet, and finished with additional concrete.

The recirculation pump station equipment would be located within the Gate 456 structure adjacent to the equipment enclosures associated with the Silver Lake Regulating Station. Construction activities for the recirculation pump station would include excavation up to 4 feet for a 15-foot by 27-foot duct bank, construction of 40 PVC conduits, casting equipment pads and concrete slabs for a 6-foot by 3-foot sized enclosure, installation of the control system, and connecting the control panel to the equipment and pipes. The pumps would be placed below-grade within a hydraulic structure, which would be shielded from view at the property line.

Approximately 100 feet of piping would be installed within the Gate 456 structure, which would pump water from Silver Lake Reservoir over a partition wall to Ivanhoe Reservoir. Inflow from Ivanhoe Reservoir to Silver Lake Reservoir would occur via the existing weir over the Silver Lake North Dam between the reservoirs. Following installation of the piping, Ivanhoe Reservoir would be refilled via gravity through the existing Gate Well structure.

It is anticipated that approximately 167 cubic yards of materials would be imported to the project site consisting of 21 cubic yards of crushed aggregate base, 5 cubic yards of asphalt, 141 cubic yards of concrete, and 8 cubic yards of slurry. Additionally, approximately 64 cubic yards of materials would be exported from the project site consisting of 35 cubic yards of soil, 2 cubic yards of asphalt, and 27 cubic yards of concrete. Materials required for construction, except for asphalt and concrete, would be stored on site.

Construction activities for Phase 2 of the proposed project would require approximately 10 pieces of equipment, including an asphalt paver, backhoe loader, barge, butt fusion machine, crane, front end loader, fork lift, generator, roller, and vibrating plate as well as maintenance and dump trucks. All equipment would be stored on site.

2.5 Best Management Practices

An appropriate combination of monitoring and resource impact avoidance would be employed during all phases of the proposed project, including implementation of the following Best Management Practices:

- The proposed project would implement Rule 403 dust control measures required by the South Coast Air Quality Management District (SCAQMD), which would include the following:
  - Water shall be applied to exposed surfaces at least two times per day to prevent generation of dust plumes.
  - All haul trucks hauling soil, sand, and other loose materials shall be covered (e.g., with tarps or other enclosures that would reduce fugitive dust emissions).
  - Construction activity on exposed or unpaved dirt surfaces shall be suspended when wind speed exceeds 25 miles per hour (such as instantaneous gusts).
  - Ground cover in disturbed areas shall be replaced in a timely fashion when work is completed in the area.
  - Identify a community liaison concerning on-site construction activity including resolution of issues related to PM_{10} generation.
  - Apply non-toxic soil stabilizers according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for ten days or more).
  - Traffic speeds on all unpaved roads to be limited to 15 mph or less.
  - Sweep streets at the end of the day if visible soil is carried onto adjacent public paved roads. If feasible, use water sweepers with reclaimed water.
- The construction contractor would develop and implement an erosion control plan and Storm Water Pollution Prevention Plan for construction activities. Erosion control and grading plans may include, but would not be limited to, the following:
  - Minimizing the extent of disturbed areas and duration of exposure;

  - Stabilizing and protecting disturbed areas;
  - Keeping runoff velocities low; and
  - Retaining sediment within the construction area.
  - Construction erosion control Best Management Practices may include the following:
    - Temporary desilting basins;
    - Silt fences;
    - Gravel bag barriers;
    - Temporary soil stabilization with mattresses and mulching;
    - Temporary drainage inlet protection; and
    - Diversion dikes and interceptor swales.
- The proposed project construction would incorporate source reduction techniques and recycling measures and maintain a recycling program to divert waste in accordance with the Citywide Construction and Demolition Debris Recycling Ordinance.

- LADWP would conduct pre-construction surveys for nesting birds and provide a biological monitor as necessary should project activities be initiated during the nesting bird season, generally February 15 through September 1.

- LADWP would coordinate with emergency response agencies, including but not limited to the Los Angeles Fire Department and Los Angeles Police Department, regarding construction schedules and worksite traffic control plans to coordinate emergency response routing and maintain emergency access.

- LADWP would ensure all construction crews have fire-suppression equipment (such as fire extinguishers) on site to respond to the accidental ignition of a fire.

3. METHODS FOR ASSESSING BIOLOGICAL RESOURCES

A search of relevant regional databases for special-status biological resources in the vicinity of the project area was conducted. The SLRC is located in the northeastern portion of the U.S. Geological Survey's (USGS) Hollywood, California quadrangle. A search of the Hollywood quadrangle and surrounding eight quadrangles (nine-quad search), including Van Nuys, Burbank, Pasadena, Beverly Hills, Los Angeles, Venice, Inglewood, and South Gate, as made of the California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB) and of the California Native Plant Society's (CNPS) on-line Inventory of Rare and Endangered Plants of California. Additionally, the U.S. Fish and Wildlife Service's (USFWS) online Information for Planning and Consultation (IPaC) database was queried for special-status species, sensitive natural communities, and protected areas known from the project vicinity.

The project area evaluated for biological resources includes the SLRC, plus a 500-foot survey buffer around the SLRC, combined the Biological Survey Areas (BSA) (see Figures 3 and 4). A buffer around the SLRC was evaluated in order to capture potential indirect effects to biological resources from implementation of the project. Indirect effects could include

elevated noise and dust levels, soil compaction, and increased human activity within the BSA. A 500-foot survey buffer is standard for capturing potential indirect impacts from a project on biological resources. It is anticipated that indirect impacts beyond 500 feet for this project are generally diffuse and would not significantly impact biological resources.

A field survey of the SLRC, focusing on areas where the proposed project components will be installed was conducted by AECOM biologist Art Popp on January 10, 2020 to document existing biological resources that occur or have the potential to occur within and adjacent to the BSA, and to evaluate the potential for special-status plant and wildlife species to occur within the BSA. Binoculars were utilized to scan for evidence of wildlife activity in the BSA. Seasonal, species-specific botanical and wildlife surveys were not conducted as part of this evaluation; however, based on the survey conducted and an assessment of conditions in the BSA, it is apparent that special-status plant and wildlife species are not anticipated within the SLRC and surrounding urbanized environment.

4. EXISTING CONDITIONS

The proposed project components occur within the developed SLRC, which consists of the two reservoirs and associated structures, a landscape maintenance yard and large publicly-accessible lawn area with footpaths that occur along the east side of Silver Lake reservoir, and paved roadways, buildings, and landscaped areas with ornamental vegetation throughout. Of note are groves of mature eucalyptus trees occurring on both the east and west sides of Silver Lake Reservoir. Residential development surrounds the SLRC and includes mature ornamental trees, ornamental gardens/plantings, and lawns. Elevations within the SLRC generally range between 450-500 feet above mean sea level (AMSL) and the immediate surrounding area. Residential development along the west side of the reservoirs quickly rise up to approximately 600 feet amsl.

Photographs of the location of proposed project components are included in Attachment B.

4.1 Vegetation Communities and Plants

Vegetation communities are assemblages of plant species that commonly coexist. The classification of vegetation communities is based on the life form of the dominant species within that community and the associated species. Vegetation in the SLRC and surrounding BSA is described below. No native plant communities occur within the BSA and the nearest natural vegetation communities occur two plus miles northwest of the SLRC in Griffith Park.

SLRC

Vegetation in the SLRC includes mature groves of trees on both the east and west side of Silver Lake Reservoir; an approximate 5-acre green space known as Silver Lake Meadows that consists primarily of lawn on the east side of Silver Lake Reservoir; and an approximate 1-acre area along the west side of Ivanhoe Reservoir that formerly served as a staging area for work associated with the SRP, but has since been landscaped with ornamental trees, shrubs, and groundcover (Figure 3). Mature trees are also lined along fence lines around the SLRC.

The eucalyptus grove on the west side of Silver Lake Reservoir covers approximately 3 acres and contains mature blue gum (*Eucalyptus globulus*) with an understory of lawn. On the east side of Silver Lake Reservoir, mature red gum (*E. camaldulensis*) dominates, with

mature cypress (*Cupressus* sp.), pine (*Pinus* sp.), oak (*Quercus* sp.), southern silk oak (*Grevillea robusa*), and other ornamental species also present.

Vegetation in the landscaped area on the east side of Ivanhoe Reservoir includes plantings of occasional spruce (*Picea* sp.) trees, mulefat (*Baccharis salicifolia*), willow (*Salix* sp.), olive (*Olea eruopaea*), and other shrubs, with a ground cover of deer grass (*Muhlenbergia rigens*) and ornamental iris (*Iris* sp.).

Surrounding BSA

Residential development in the area surrounding the SLRC consists primarily of paved surfaces and residential lots which largely have only small areas of ornamental plantings or lawn, with an occasional tall mature ornamental tree occurring on an individual lot. Eucalyptus, pine, cedar, various palm tree species, African fern pine (*Afrocarpus gracilior*), and ficus (*Ficus benjamina*) trees were observed in the surrounding area.

4.2 Wildlife

Wildlife species observed during the field survey included bird species that are common in and adapted to urban environments, including American crow (*Corvus brachyrhynchos*), Eurasian collared dove (*Streptopelia decaocto*), house sparrow (*Passer domesticus*), black phoebe (*Sayornis nigricans*), yellow-rumped warbler (*Setophaga coronata*), and Anna's hummingbird (*Calypte anna*). Additionally, western gull (*Larus occidentalis*), mallard duck (*Anas platyrhynchos*), ruddy duck (*Oxyura jamaicensis*), Canada goose (*Branta canadensis*), bufflehead (*Bucephala albeola*), and American coot (*Fulica americana*) were detected on Silver Lake Reservoir. Overall bird activity was low and no other wildlife (i.e. mammals, reptiles) were observed within the SLRC during the site visit.

Three adult great blue heron (*Ardea herodias*) were observed in a cypress tree just outside the SLRC north of Ivanhoe Reservoir, at the intersection of Tesla Avenue and Rokeby Street. At least three large stick nests are visible in this tree; however, these herons did not exhibit signs of nesting during the field survey. A great blue heron rookery has been present within the eucalyptus grove on the west side of Silver Lake Reservoir since at least 2005 when the species was documented on-site during environmental review of the SRP.[1] More recently, AECOM documented approximately 14 nests in the rookery during regular surveys and monitoring in 2015. In 2018, herons were also observed beginning to nest in a cypress tree just outside the SLRC (AECOM unpublished data). This bird species is tracked by CDFW in the CNDDB.

AECOM conducted wildlife surveys and construction monitoring in support of the SLRC SRP and in 2015 documented all wildlife species that were observed. Approximately 130 wildlife species within and adjacent to the SLRC, including approximately 120 bird species were documented (AECOM unpublished data). In addition to great blue heron, which was generally the focus of survey and monitoring efforts, AECOM detected red-tailed hawk (*Buteo jamaicensis*), a raptor common in urban southern California, nesting in the eucalyptus grove on the west side of Silver Lake Reservoir over the past years. Other common urban bird species were also detected nesting in the SLRC during this time

[1] CH2MHILL. 2005. Silver Lake Reservoir Complex Storage Replacement Project Draft Environmental Impact Report. Prepared for City of Los Angeles Department of Water and Power. July.

period, reflecting the suitability of ornamental vegetation in the SLRC to provide nesting habitat.

The two reservoirs in the SLRC attract water fowl that would otherwise not typically be present in an urban setting. In addition to the ducks, geese, gulls, and American coots that were present on the reservoirs during the time of the field survey, other duck species, terns, grebes, and gulls have been observed on the reservoirs, and herons have been observed along its perimeter. Although these bodies of water provide a place for water fowl to rest, no emergent or submerged vegetation, significant invertebrate populations, or fish exist within the reservoirs to support a residence waterfowl population. Due to past chemical treatment of water in the reservoirs and the isolated nature of the reservoirs (from other water sources and the public), suitable food resources for foraging water fowl has not developed in the reservoirs. Herons utilizing the on-site rookery are known to forage in the Los Angeles River, which lies approximately 1 mile to the east. There is no suitable foraging habitat for herons in the reservoirs.

AECOM conducted a habitat assessment and survey for the presence of bats at the SLRC in 2015 in support of the SLRC SRP.[2] The survey indicated that the SLRC is predominantly used by foraging Mexican free-tailed bats (*Tadarida brasiliensis*) and Yuma myotis (*Myotis yumanensis*). These species commonly forage over open water. It was determined that the site is less frequently used by canyon bat (*Parastrellus hesperus*), hoary bat (*Lasiurus cinereus*), and western red bat (*L. blossevillii*). Very few calls were detected from these species indicating they might only occasionally use the SLRC for foraging or drinking. A search of existing structures and buildings within the SLRC did not identify active day-time roosting in the SLRC, although potential night-roosting was detected at the Silver Lake Reservoir outlet structure by a few individual bats.

4.3 Wildlife Corridors

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

The project occurs within an urbanized area and the BSA does not occur within or intersect a recognized/established regional wildlife corridor. Ornamental trees within and adjacent to the SLRC provide opportunities for cover, foraging, resting, and nesting to localized bird populations, and most significantly have supported the heron rookery that herons have returned to for years to nest. Additionally, the two reservoirs provide resting habitat for water fowl undertaking localized or regional movements. Overall however, the BSA does not provide functions as a significant wildlife movement corridor.

[2] AECOM. 2015. Bat Survey and Habitat Assessment. Silver Lake Reservoir Complex. Prepared for Los Angeles Department of Water and Power. July 16.

5. SPECIAL-STATUS SPECIES

5.1 Special-Status Plant Species

Special-status plant species include those listed as Endangered, Threatened, Rare or those species proposed for listing by the US Fish and Wildlife Service (USFWS) under the federal Endangered Species Act (FESA), those listed by CDFW under the California Endangered Species Act (CESA), and the CNPS.[3,4,5] The CNPS inventory is sanctioned by the CDFW and essentially serves as the list of candidate plant species for state listing. CNPS's California Rare Plant Ranks (CRPR) 1B and 2 species are considered eligible for state listing as endangered or threatened.

A total of 66 special-status plant species were identified from the CNDDB[6] and CNPS[7] nine-quad searches, and from a search of IPaC[8] for the project area, including 13 federal and/or state-listed species:

- marsh sandwort (*Arenaria paludicola*), federal and state-listed endangered
- Braunton's milk-vetch (*Astragalus brauntonii*), federal-listed endangered
- Ventura Marsh milk-vetch (*Astragalus pycnostachyus* var. *lanosissimus*), federal and state-listed endangered
- coastal dunes milk-vetch (*Astragalus tener* var. *titi*), federal and state-listed endangered
- Nevin's barberry (*Berberis nevinii*), federal and state-listed endangered
- salt marsh bird's-beak (*Chloropyron maritimum* ssp. *maritimus*), federal and state-listed endangered
- San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*), federal candidate for listing and state-listed endangered
- beach spectaclepod (*Dithyrea maritima*), state-listed threatened
- slender-horned spineflower (*Dodecahema leptoceras*), federal and state-listed endangered
- San Diego button-celery (*Eryngium aristulatum* var. *parishii*), federal and state-listed endangered
- California Orcutt grass (*Orcuttia californica*), federal and state-listed endangered
- Gambel's watercress (*Rorippa gambellii*), federal-listed endangered and state-listed threatened
- spreading navarretia (*Navarretia fossalis*), federal-listed threatened

All 66 special-status plant species, their status, and habitat requirements are provided in Table A, Attachment C.

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

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

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

6 California Department of Fish and Wildlife. 2020. *California Natural Diversity Data Base (CNDDB).* Full condensed report for the Hollywood and surrounding eight quadrangles. Generated January 14, 2020.

7 California Native Plant Society, Rare Plant Program. 2020. Inventory of Rare and Endangered Plants (online edition, v8-02). Available at: http://www.rareplants.cnps.org/. Accessed January 14, 2020.

8 Information for Planning and Consultation. 2020. U.S. Fish and Wildlife Service. Available at: https://ecos.fws.gov/ipac/. Accessed January 14, 2020.

No special-status plant species were observed in the BSA during the field survey and no records of special-status plant species coincide with the BSA. The nearest occurrences of special-status plants are from 3 plus miles to the northwest in Griffith Park. The BSA does not provide natural habitats potentially suitable for special-status plants. Additionally, no USFWS-designated critical habitat for any special-status plant species coincides with the BSA. The nearest critical habitat area for any federally-listed plant species is approximately 16 miles to the west, in the Santa Monica Mountains near Topanga.

5.2 Special-Status Wildlife Species

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

All birds, except European starlings, English house sparrows, rock doves (pigeons), and non-migratory game birds such as quail, pheasant, and grouse are protected under the MBTA. However, non-migratory game birds are protected under California Fish and Game Code (CFGC) Section 3503. Many other species are considered by CDFW to be California Species of Special Concern (SSC) and others are on a CDFW Watch List (WL). The CNDDB tracks species within California for which there is conservation concern, including many that are not formally listed, and assigns them a CNDDB Rank.[9] Although CDFW SSC and WL species and species that are tracked by the CNDDB but not formally listed are afforded no official legal status, they may receive special consideration during the environmental review process. CDFW further classifies some species as "Fully Protected" (FP), indicating that the species may not be taken or possessed except for scientific purposes, under special permit from CDFW. Additionally, CFGC Sections 3503, 3505, and 3800 prohibit the take, destruction, or possession of any bird, nest, or egg of any bird except English house sparrows and European starlings unless authorization is obtained from CDFW.

A total of 54 special-status wildlife species were identified from the CNDDB[10] nine-quad search and from a search of IPaC[11] for the project vicinity, including 16 federal and/or State-listed wildlife species:

- Crotch bumble bee (*Bombus crotchii*), candidate for state-listed endangered
- El Segundo blue butterfly (*Euphilotes battoides allvni*), federally-listed endangered
- Riverside fairy shrimp (*Streptocephalus wootoni*), federally-listed endangered
- southern mountain yellow-legged frog (*Rana mucosa*), federally and state-listed endangered
- tricolored blackbird (*Agelaius tricolor*), state-listed threatened
- Swainson's hawk (*Buteo swainsoni*), state-listed threatened
- western snowy plover (*Charadrius alexandrines nivosus*), federally-listed threatened

[9] California Department of Fish and Wildlife. 2019. California Natural Diversity Database (CNDDB). Special Animals List. August.

[10] California Department of Fish and Wildlife. *California Natural Diversity Data Base (CNDDB).* Full condensed report for the Hollywood and surrounding eight quadrangles. Generated January 14, 2020.

[11] Information for Planning and Consultation. 2020. U.S. Fish and Wildlife Service. Available at: https://ecos.fws.gov/ipac/. Accessed January 14, 2020.

- western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), federally-listed threatened and state-listed endangered
- southwestern willow flycatcher (*Empidonax traillii extimus*), federally and state-listed endangered
- California black rail (*Laterallus jamaicensis coturniculus*), state-listed threatened
- Belding's savannah sparrow (*Passerculus sandwichensis beldingi*), state-listed endangered
- coastal California gnatcatcher (*Polioptila californica californica*), federally-listed threatened
- bank swallow (*Riparia riparia*), state-listed threatened
- California least tern (*Sternula antillarum browni*), federally and state-listed endangered
- least Bell's vireo (*Vireo bellii pusillus*), federally and state-listed endangered
- Pacific pocket mouse (*Perognathus longimembris pacificus*), federally-listed endangered

All 54 special-status wildlife species, their status, and habitat requirements are provided in Table B, Attachment C.

No records of special-status wildlife species that coincide with the BSA were identified during the database review. A few CNDDB records are known from within one mile of the project, including for the federally and state-listed endangered least Bell's vireo, the state-threatened bank swallow, and the non-listed hoary bat, which is tracked by CDFW in the CNDDB. Records for the vireo and bank swallow are 80 plus years old and these species, as well as other special-status wildlife species listed in Table B of Attachment C are not expected in the BSA due to a lack of suitable habitat for them.

Although not conducive to supporting special-status wildlife, several such species have been documented by AECOM at the SLRC. As presented in Section 4.2, great blue heron, which is tracked by CDFW in the CNDDB, are present during the breeding season in and around the SLRC, and hoary bat was identified in the SLRC during a bat survey conducted in 2015. Additional special-status wildlife, including Peregrine falcon (*Falco peregrinus*; federally and state-delisted and FP), merlin (*F. columbarius*; WL), and California gull (*Larus californicus*; WL) were documented during surveys and monitoring efforts conducted by AECOM in 2015; however, none of these species were detected nesting within the SLRC or in the surrounding area.

6. SENSITIVE NATURAL COMMUNITIES

Sensitive natural communities are those that are designated as rare in the region by the CNDDB, support special-status plant or wildlife species, or receive regulatory protection (i.e., Section 404 of the Clean Water Act (CWA) and/or Sections 1600 et seq. of the CFGC). Rare communities are given the highest inventory priority.[12,13] Based on a review of the CNDDB,[14] 8 sensitive vegetative communities were identified during the nine-quad search of the CNDDB:

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

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

[14] California Department of Fish and Wildlife. *California Natural Diversity Data Base (CNDDB).* Full condensed report for the Hollywood and surrounding eight quadrangles. Generated January 14, 2020.

- California Walnut Woodland
- Riversidian Alluvial Fan Sage Scrub
- Southern Coast Live Oak Riparian Forest
- Southern Coastal Salt Marsh
- Southern Cottonwood Willow Riparian Forest
- Southern Dune Scrub
- Southern Sycamore Alder Riparian Woodland
- Walnut Forest

These sensitive communities are primarily documented in the CNDDB from Griffith Park and the Santa Monica Mountains 3 plus miles to the northwest-west, and the Verdugo Mountains 5 plus miles to the north.

No sensitive natural communities occur within the BSA. Vegetation in the project area consists of ornamental trees and shrubs that are common in urban environments. Additionally, no USFWS-designated critical habitat, or aquatic features (i.e. wetlands or other waters of the U.S.) under regulatory jurisdiction of the U.S. Army Corps of Engineers (USACE) coincide with the BSA. However, the reservoirs may be considered "waters of the State" under regulatory jurisdiction of CDFW, and the Regional Water Quality Control Board (RWQCB), and are discussed further below.

7. APPLICABLE REGULATIONS

7.1 Federal Regulations and Standards

Federal Endangered Species Act (ESA)

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

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

Migratory Bird Treaty Act

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

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

Bald and Golden Eagle Protection Act

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

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

Clean Water Act

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

It has been determined during coordination with USACE regarding the proposed project that the two reservoirs do not fall under regulatory jurisdiction of the USACE, and as a result permits pursuant to CWA Sections 404 and 401 are not required for the project.

7.2 State Regulations and Standards

California Fish and Game Code

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

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

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

The two reservoirs constitute aquatic features potentially falling under CDFW jurisdiction. As a result, coordination with CDFW and the subsequent issuance of a permit pursuant to the LSAA program is anticipated for the project.

Porter-Cologne Water Quality Control Act

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

Although the reservoirs are not considered waters of the U.S. falling under federal jurisdiction of the USACE, they may be considered waters of the State under RWQCB jurisdiction. Since project activities will occur within and along the reservoirs, it is anticipated that a permit pursuant to RWQCB's Waste Discharge Requirements (WDR) Program under Porter-Cologne will be required to permit dredge and fill activities associated with the reservoirs under the project.

California Water Code Division 3. Dams and Reservoirs

Laws pertaining to the California dam safety program were originally adopted in 1929 and are amended in the California Water Code (CWC) Division 3, Section 6000-6501, last amended in 2003. Regulations are in California Administrative Code Title 23 Chapter 2, Articles 1-301 to Articles 5-333, adopted in 1986. The code defines jurisdictional dams according to size, function and structure. A jurisdictional dam is any artificial barrier that is six feet or more in height and with a storage capacity of more than 50 acre-feet, or 25 feet in height with a storage capacity of more than 15 acre-feet (CWC 1.6002 and 1.6003). Silver Lake and Ivanhoe Reservoirs are jurisdictional dams and thus under regulation of the Department of Water Resources, Division of Safety of Dams (DSOD).

DSOD requires approval of an *Application for Approval of Plans and Specifications for the Alteration of a Dam and Reservoir* prior to the initiation of project construction that would modify or alter any dam or reservoir under their jurisdiction. As jurisdictional dams, it is anticipated that LADWP will be required to complete the application for DSOD approval for installation of aeration and recirculation components under the project.

California Environmental Quality Act[15]

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

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

7.3 Local Regulations and Standards

Significant Ecological Area Program

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

Together, the General Plan overlays and a SEA conditional use permit (CUP) process are referred to as the SEA Program. The SEA Program, through goals and policies of the General Plan and the SEA ordinance (Title 22 Zoning Regulations, Section 22.56.215) help guide development within SEAs. The SEA ordinance establishes the permitting, design standards, and review process for development within SEAs, and permits are reviewed by the SEA Technical Advisory Committee. Development activities in the SEAs are reviewed closely in order to conserve water and biological resources such as streams, oak woodlands, and threatened or endangered species and their habitat.

The BSA does not coincide with a SEA. The Griffith Park SEA lies approximately 1.5 miles northwest of the BSA. The project is not anticipated to affect resources within this SEA, and as a result the SEA program would not be applicable to the proposed project.

City of Los Angeles Protected Tree Ordinance

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

No trees would be removed during implementation of the project and as a result, conflict with the oak tree ordinance is not anticipated.

8. IMPACTS ON BIOLOGICAL RESOURCES

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

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

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

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

- **Temporary**: Any impacts considered to have reversible effects on biological resources can be viewed as temporary. Examples include the generation of fugitive dust during construction; or removing vegetation for the preparation of stream bank stabilization activities, and either allowing the natural vegetation to recolonize or actively revegetating the impact area. Surface disturbance that removes vegetation and disturbs the soil is considered a long-term temporary impact because of slow natural recovery in arid ecosystems.

8.1 Construction

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

8.1.1 Vegetation

Construction of proposed project components will primarily coincide with the existing reservoirs and associated infrastructure. Installation of the Ivanhoe Inlet Tower Plug, Air Blower Enclosure, and Recirculation Pump Station will occur within existing structures, while the Ivanhoe Recirculation Pipeline and One-Inch Air Pipes will be installed via trenching in paved areas and by self-weighted lines that will be placed along the bottom of the reservoirs. Only activities associated with installation of the Ivanhoe Bypass Pipeline Plug will occur in a vegetated area, the former staging yard utilized for the SRP which was covered by landscaping in 2017 (see Figure 3 and Photo 3).

Only ornamental landscape species would be removed during installation of the bypass plug. This does not constitute a significant direct impact and the area would be restored with similar landscaping upon completion of the project.

Indirect impacts to vegetation during project construction could include the accumulation of fugitive dust, and further colonization of nonnative, invasive plant species. Other indirect impacts could include an increase in the amount of compacted or modified surfaces that, if not controlled, could increase the potential for surface runoff, increased erosion, and sediment deposition beyond the project's footprint. Indirect impacts to ornamental vegetation surrounding project components; however, do not constitute a significant impact. Additionally, with implementation of the BMP included in Section 2.5, indirect impacts to vegetation surrounding project components are not anticipated to occur.

8.1.2 Special Status Plant Species

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

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

8.1.3 Sensitive Natural Communities

Implementation of the proposed project would not result in direct or indirect impacts to any sensitive natural communities, as none occur within the BSA or surrounding area. The nearest natural communities occur 2 plus miles northwest of the BSA in Griffith Park. As a result, significant impacts to sensitive natural communities are not anticipated due to the distance between the project and park.

8.1.4 Wildlife

Elements of project construction could potentially affect common wildlife; however, the mortality or injury of individual species is not likely, as the site does not support many species with limited mobility or that occupy burrows within the construction zone that could be crushed during proposed project activities. Short-term indirect effects on wildlife, primarily urban bird species (discussed further below), would occur due to noise disturbances, increased human activity, and vibrations caused by heavy equipment. Wildlife mortality is however, unlikely and as a result significant impacts to common wildlife are not anticipated.

Ornamental vegetation in the BSA provides suitable nesting habitat for common urban bird species protected by the MBTA and by CFGC, including great blue heron, red-tailed hawk, and other common species documented nesting in the BSA during surveys and monitoring in support of projects previously implemented within the SLRC. By avoiding project construction during the nesting bird season (generally February 15 to September 1, and as early as January 1 for raptors), or by implementing and adhering to BMP included in Section 2.5 related to pre-construction surveys for nesting birds and providing a qualified biological monitor should nesting birds be present, direct impacts during project construction on nesting birds and associated nesting habitats are not anticipated.

Indirect impacts to nesting birds within the BSA could occur during construction as a result of noise, dust, increased human presence, and vibrations resulting from construction activities. Such disturbances could result in increased nestling mortality due to nest abandonment or decreased feeding frequency. Therefore, indirect impacts would be

considered significant. However, by implementing and adhering to BMP included in Section 2.5 related to pre-construction surveys and providing qualified biological monitors as necessary, indirect impacts to nesting birds protected under the MBTA and by CFGC would be reduced to less than significant.

To facilitate installation of the Ivanhoe Inlet Tower Plug and Ivanhoe Bypass Pipeline Plug, water in Ivanhoe Reservoir would be pumped into Silver Lake Reservoir. Draining of Ivanhoe Reservoir is not anticipated to impact wildlife. No food resources for wildlife exist in Ivanhoe Reservoir and Silver Lake Reservoir will not be drained, providing ample resting space immediately adjacent.

8.1.5 Special-Status Wildlife Species

Individual special-status wildlife species could be directly and indirectly affected during construction in the same manner as described above; however, no federal or State-listed wildlife species have been identified in the BSA, and potentially suitable habitat for such species is absent from the BSA. As a result, direct and indirect impacts to a federally and/or State-listed wildlife species is not anticipated and impacts to such would not be significant.

As described in Section 4.2, non-listed special-status wildlife including great blue heron, Peregrine falcon, merlin, California gull, and hoary bat have been detected in the BSA. Since these are mobile species and the removal of bird nesting (mature trees) and bat roosting (structures/buildings within the SLRC) habitats would not occur, direct impacts to non-listed special-status species would not occur. However, indirect impacts to non-listed special-status bird species within the vicinity of the project could occur as a result of noise, increased human presence, and vibrations resulting from construction activities. Such disturbances could result in increased nestling mortality due to nest abandonment or decreased feeding frequency. Therefore, indirect impacts would be considered significant. However, by implementing and adhering to the BMP included in Section 2.5 related to pre-construction surveys and providing qualified biological monitors as necessary, indirect impacts to non-listed special-status birds nesting in the BSA would be reduced to less than significant.

Indirect impacts to non-listed special-status bats roosting within the vicinity of the project could occur as a result of noise, increased human presence, and vibrations resulting from construction activities. Disturbances related to construction could result in displacement from daytime roosts. However, as presented in Section 4.2, day-time roosting by bats in the SLRC has not been observed and is unlikely. Additionally, disruption of night-time roosts is not anticipated as construction would not occur during dusk or evening hours. As a result, significant direct and indirect impacts to special-status bats are not anticipated.

8.1.6 Wildlife Movement Corridor

The BSA does not serve as a regional wildlife corridor and as a result, direct impacts to a regional wildlife movement corridor would not occur. Project construction activities (i.e., increased noise, human presence, vibration) would likely result in bird species traveling through the area avoiding the immediate project vicinity, or in increased nestling mortality due to nest abandonment or decreased feeding frequency in the event that active bird nests are present. Such indirect effects would be temporary in nature, restricted to the project construction time period. By implementing and adhering to the BMP included in Section 2.5

related to pre-construction surveys and providing qualified biological monitors as necessary, indirect impacts to localized bird movement and nesting are not anticipated.

8.1.7 Potential Jurisdictional Features

To facilitate installation of the Ivanhoe Inlet Tower Plug and Ivanhoe Bypass Pipeline Plug, water in Ivanhoe Reservoir would be pumped into Silver Lake Reservoir. Draining of Ivanhoe Reservoir, work at the inlet tower within Ivanhoe, and installation of the air pipes along and within the reservoirs may constitute an impact to waters of the State. As a result, permits under CDFW's LSAA program and RWQCB's WDR program may be required for the project. By coordinating with CDFW and RWQCB regarding permits under their respective programs, potential impacts to waters of the State would be less than significant.

Indirect impacts to the reservoirs may result from stormwater runoff during construction activities where a reduction in water quality resulting from increased sedimentation or other contaminants could occur. These water quality changes could potentially reduce the quality of the reservoirs. To avoid impacts to water quality, a Stormwater Pollution Prevention Plan (SWPPP) will be developed and implemented, and will include BMP to minimize downstream effects of stormwater runoff or conveyance of sediment or other contaminants into the reservoirs. By implementing a SWPPP and obtaining permits pursuant to CDFW's LSAA program and RWQCB's WDR program, the potential for indirect impacts to the jurisdictional reservoirs would be less than significant.

8.2 Operation

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

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

Should operation or maintenance activities beyond what would normally be expected following installation of project components be required during the bird breeding season and these activities could generate indirect impacts due to noise, human presence, and vibrations, implementation and adherence to the BMP included in Section 2.5 related to pre-construction surveys and providing qualified biological monitors as necessary, would reduce potential indirect impacts to nesting birds to a level less than significant. Further, should it be determined that operation or maintenance activities may constitute an impact to waters of the State, permits pursuant to CDFW's LSAA program and RWQCB's WDR program would ensure impacts to potentially jurisdictional features (the reservoirs) would be less than significant.

9. AVOIDANCE, MINIMIZATION, AND STANDARD CONSTRUCTION MEASURES

With the potential for nesting birds protected under the MBTA and CFGC to occur in ornamental trees within the BSA, implementation of pre-construction surveys and providing a qualified biological monitor per the BMP presented in Section 2.5 would ensure potential impacts to nesting birds are avoided. Impacts to potential jurisdictional features would be avoided by obtaining the necessary agency permits discussed above.

10. CONCLUSIONS

Based on the analysis presented above regarding anticipated effects of the proposed project, significant impacts to non-listed special-status nesting birds (i.e. great blue heron) and those protected under the MBTA and by CFGC could occur. However, by conducting pre-construction surveys and subsequent biological monitoring efforts as described in the BMP presented in Section 2.5, significant impacts to biological resources would be reduced to a level below significance.

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

Sincerely,



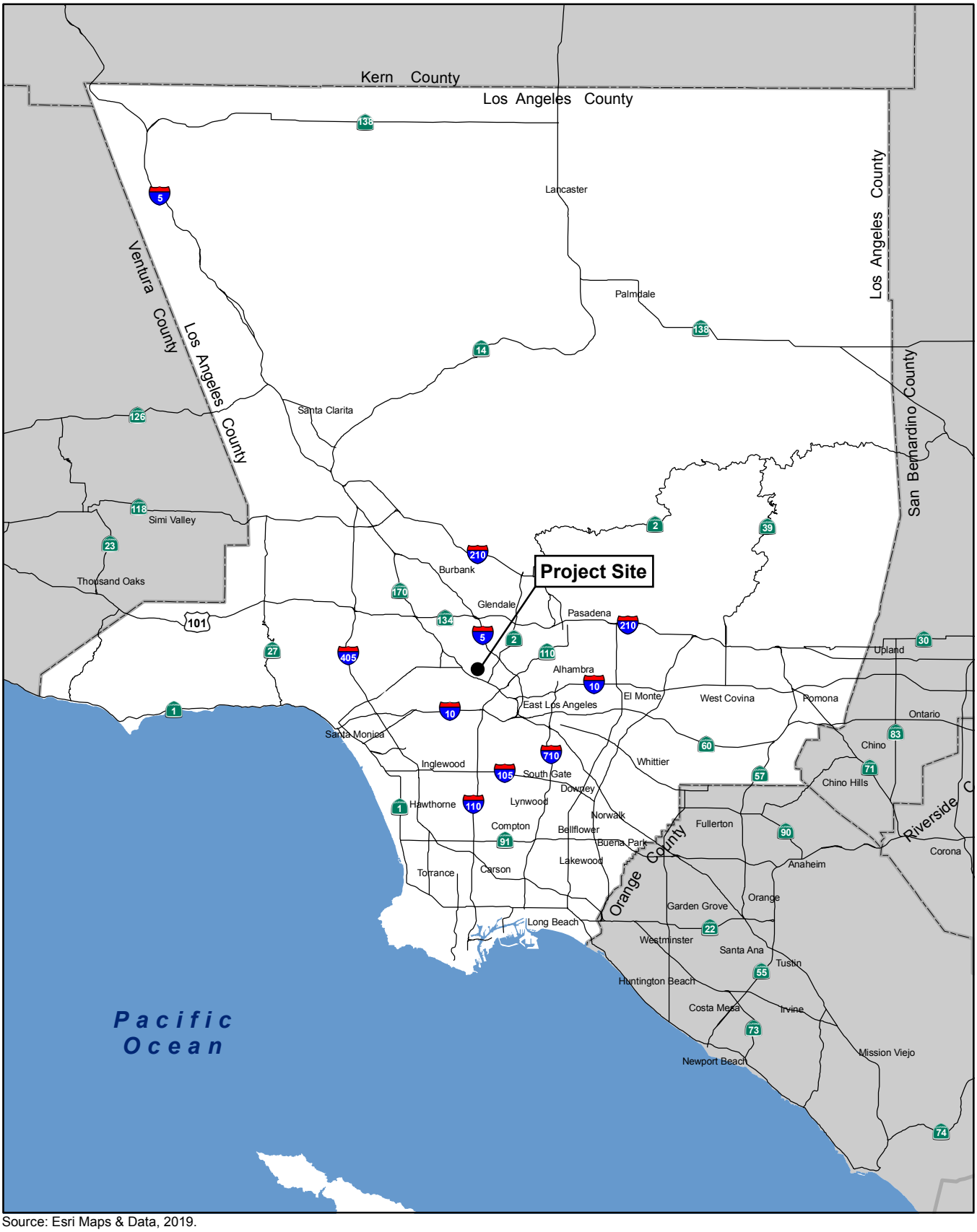
Arthur Popp
Senior Biologist

Enc:

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

ATTACHMENT A

PROJECT FIGURES



Source: Esri Maps & Data, 2019.

0 3 6 12 18 24 Miles

Figure 1
Regional Map



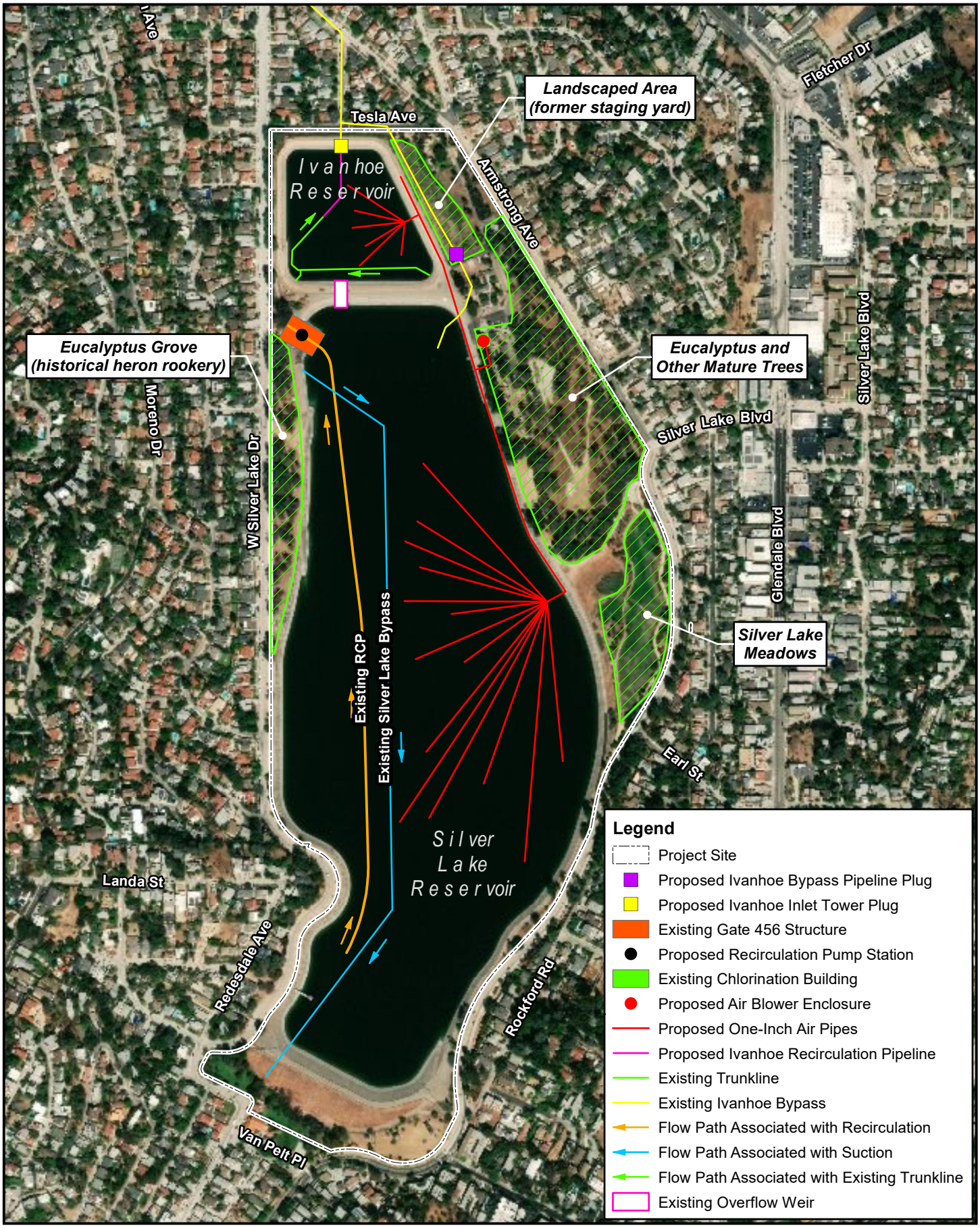
Source: Esri, 2020; Prepared By AECOM, 2020.

0 250 500 1,000 Feet

SLRC Boundary

Project Site

Figure 2
Project Location Map



Source: Bing Aerial, 2020; Prepared By Aecom, 2020.

0 250 500 1,000 Feet

Figure 3

Proposed Project
Aeration and Recirculation System

ATTACHMENT B

PROJECT PHOTOGRAPHS



Photo 1. Southwest-facing view of the Ivanhoe Inlet Tower at the north end of Ivanhoe Reservoir.



Photo 2. West-facing view of Gate 456 Structure (red arrow) at northwest corner of Silver Lake Reservoir.



Photo 3. North-facing view of former staging yard area on the east side of Ivanhoe Reservoir that is now landscaped and where installation of the Ivanhoe Bypass Pipeline Plug will occur. The bypass pipeline lies beneath this landscaped area.



Photo 4. Southeast-facing view of the chlorination station on the east side of Silver Lake Reservoir, where the Air Blower Closure will be installed.



Photo 5. North-facing view across Ivanhoe Reservoir.

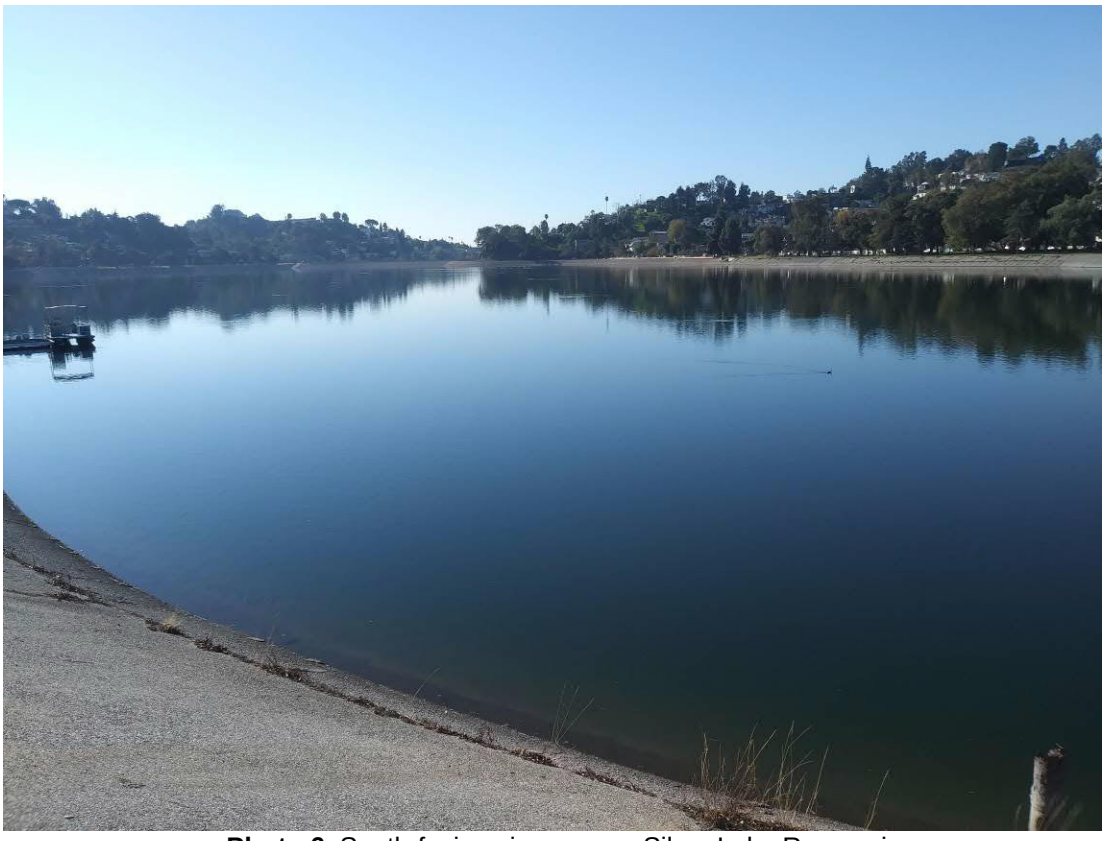


Photo 6. South-facing view across Silver Lake Reservoir.

ATTACHMENT C

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

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

Common Name *Scientific Name*[2]	Status[3]	General Habitat Description[4]
Plants		
red sand-verbena *Abronia maritima*	Federal: None State: None CRPR: 4.2	Found in coastal dune habitats. Occurs between 0 and 328 feet (0 to 100 meters). Blooms February to November.
marsh sandwort *Arenaria paludicola*	Federal: FE State: SE CRPR: 1B.1	Prefers sandy areas in freshwater brackish marshes and swamps. Occurs between 10 and 560 feet (3 to 170 meters). Blooms May to August.
western spleenwort *Asplenium vespertinum*	Federal: None State: None CRPR: 4.2	Prefers rocky areas in chaparral, cismontane woodland, and coastal scrub habitats. Occurs between 590 to 3,280 feet (180 to 1,000 meters). Blooms February to June.
Braunton's milk- vetch *Astragalus brauntonii*	Federal: FE State: None CRPR: 1B.1	Found in closed-cone coniferous forest, chaparral, coastal scrub, and valley and foothill grassland. Prefers recent burns or disturbed areas, in stiff gravelly clay soils overlying granite or limestone. Occurs between 13 and 2,100 feet (4 to 640 meters). Blooms January to August.
Ventura marsh milk- vetch *Astragalus pycnostachyus* var. *lanosissimus*	Federal: FE State: SE CRPR: 1B.1	Found in coastal dune and coastal scrub habitats; also occurs in coastal salt or brackish marshes and swamps. Occurs between 3 and 115 feet (1 to 35 meters). Blooms (June) August to October.
coastal dunes milk- vetch *Astragalus tener* var. *titi*	Federal: FE State: SE CRPR: 1B.1	Found in sandy or vernally mesic areas in coastal bluff scrub, coastal dune, and coastal prairie habitats. Occurs between 3 and 165 feet (1 to 50 meters). Blooms March to May.
Coulter's saltbush *Atriplex coulteri*	Federal: None State: None CRPR: 1B.2	Found in alkaline or clay soils in coastal bluff scrub, coastal dune, coastal scrub, and valley and foothill grassland habitats. Occurs between 9 and 1,510 feet (3 to 460 meters). Blooms March to October.
south coast saltscale *Atriplex pacifica*	Federal: None State: None CRPR: 1B.2	Found in coastal bluff scrub, coastal dunes, coastal scrub, and playas. Occurs between 0 and 460 feet (0 to 140 meters). Blooms March to October.
Parish's brittlescale *Atriplex parishii*	Federal: None State: None CRPR: 1B.1	Alkaline chenopod scrub, playas, and vernal pools. Occurs between 80-6,230 feet (25-1,900 meters). Blooms June to October.
Davidson's saltscale *Atriplex serenana* var. *davidsonii*	Federal: None State: None CRPR: 1B.2	Found in alkaline habitats, including coastal scrub and coastal bluff scrub. Occurs between 30 and 650 feet (10 to 200 meters). Blooms April to October.
Nevin's barberry *Berberis nevinii*	Federal: FE State: SE CRPR: 1B.1	Chaparral, cismontane woodland, coastal scrub, riparian scrub. Occurs between 230 and 2,700 feet (70 to 825 meters). Blooms (February) March to June.

Common Name ***Scientific Name*[2]**	**Status[3]**	**General Habitat Description[4]**
Catalina mariposa lily *Calochortus catalinae*	Federal: None State: None CRPR: 4.2	Chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland. Occurs between 50 and 2,300 feet (15 to 700 meters). Blooms February to June.
slender mariposa lily *Calochortus clavatus var. gracilis*	Federal: None State: None CRPR: 1B.2	Chaparral, coastal scrub, valley and foothill grassland. Occurs between 1,050 and 3,250 feet (320 to 1,000 meters). Blooms March to June (November).
Plummer's mariposa-lily *Calochortus plummerae*	Federal: None State: None CRPR: 4.2	Coastal scrub, chaparral, valley and foothill grassland, cismontane woodland, lower montane coniferous forest, on rocky and sandy sites (granitic or alluvial material). Occurs between 330 and 5,580 feet (100 to 1,700 meters). Blooms May to July.
lucky morning-glory *Calystegia felix*	Federal: None State: None CRPR: 1B.1	Usually found in wetland and marsh habitats, occasionally in drier habitats, including meadows and seeps and riparian scrub. May inhabit areas with silty loam and alkaline soils. Occurs between 98 and 700 feet (30 to 215 meters). Blooms March to September.
Lewis' evening primrose *Camissoniopsis lewisii*	Federal: None State: None CRPR 3	Sandy or clay sites in coastal bluff scrub, cismontane woodland, coastal dunes, coastal scrub, and valley and foothill grasslands. Occurs between 0 and 980 feet (0 to 300 meters). Blooms March to June.
southern tarplant *Centromadia parryi* ssp. *australis*	Federal: None State: None CRPR: 1B.1	Marshes and swamps (margins), valley and foothill grassland. Often in disturbed sites near the coast at marsh edges; also, in alkaline soils sometimes with saltgrass. Occurs between 0 and 1,570 feet (0 to 480 meters). Blooms May to November.
smooth tarplant *Centromadia pungens* ssp. *laevis*	Federal: None State: None CRPR: 1B.1	Found in vernal pools, vernally mesic valley and foothill grasslands, and around margins of marshes and swamps. Occurs between 0 and 1575 feet (0 to 480 meters). Blooms May to November.
Orcutt's pincushion *Chaenactis glabriuscula* var. *orcuttiana*	Federal: None State: None CRPR: 1B.1	Prefers sandy soils in coastal bluff scrub and coastal dune habitats. Occurs between 0 and 328 feet (1 to 100 meters). Blooms January to August.
coastal goosefoot *Chenopodium littoreum*	Federal: None State: None CRPR: 1B.2	Found in coastal dune habitats. Occurs between 32 and 100 feet (10 to 30 meters). Blooms April to August.
salt marsh bird's-beak *Chloropyron maritimum* ssp. *maritimum*	Federal: FE State: SE CRPR: 1B.2	Found in coastal dunes and coastal salt marshes and swamps. Occurs between 0 and 98 feet (0 to 30 meters). Blooms May to October (November).

Common Name ***Scientific Name*[2]**	**Status[3]**	**General Habitat Description[4]**
San Fernando Valley spineflower *Chorizanthe parryi var. fernandina*	Federal: FC State: SE CRPR: 1B.1	Preferred habitat includes sandy coastal scrub, valley and foothill grasslands. Occurs between 495 and 4000 feet (150 to 1,220 meters). Blooms April to July.
Parry's spineflower *Chorizanthe parryi* var. *parryi*	Federal: None State: None CRPR: 1B.1	Prefers sandy or rocky soils in chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland habitats. Occurs between 900 and 4,005 feet (275 to 1,220 meters). Blooms April to June.
monkey-flower savory *Clinopodium mimuloides*	Federal: None State: None CRPR: 4.2	Found in mesic areas or on streambanks in chaparral and North Coast coniferous forest habitats. Occurs between 1,000 and 5,905 feet (305 to 1,800 meters). Blooms June to October.
small-flowered morning-glory *Convolvulus simulans*	Federal: None State: None CRPR: 4.2	Found in clay, serpentine seeps in chaparral, coastal scrub, and valley and foothill grassland habitats. Occurs between 98 and 2,430 feet (30 to 740 meters). Blooms March to July
paniculate tarplant *Deinandra paniculata*	Federal: None State: None CRPR: 4.2	Usually prefers vernally mesic, sometimes sandy coastal scrub, valley foothill grassland, and vernal pool habitats. Occurs between 80 to 3085 feet (25 to 940 meters). Blooms (March) April to November.
western dichondra *Dichondra occidentalis*	Federal: None State: None CRPR: 4.2	Found in chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland habitats. Occurs between 165 and 1,640 feet (50 to 500 meters). Blooms (January) March to July.
beach spectaclepod *Dithyrea maritima*	Federal: None State: ST CRPR: 1B.1	Prefers sandy soils in coastal dunes and coastal scrub habitats. Occurs between 9 and 165 feet (3 to 50 meters). Blooms March to May.
slender-horned spineflower *Dodecahema leptoceras*	Federal: FE State: SE CRPR: 1B.1	Sandy chaparral, cismontane woodland, and alluvial fan coastal scrub. Occurs between 890 and 2,510 feet (200 to760 meters). Blooms April to June.
many-stemmed dudleya *multicaulis*	Federal: None State: None CRPR: 1B.2	Chaparral, coastal scrub, valley and foothill grassland. Often in clay soils. Occurs between 50 and 2,520 feet (15 to 790 meters). Blooms April to July.
San Diego button-celery *Eryngium aristulatum* var. *parishii*	Federal: FE State: SE CRPR: 1B.1	Found in mesic areas in coastal scrub, valley and foothill grassland, and vernal pool habitats. Occurs between 65 and 2,035 feet (20 to 620 meters). Blooms April to June.
suffrutescent wallflower *Erysimum suffrutescens*	Federal: None State: None CRPR: 4.2	Found in coastal bluff scrub, maritime chaparral, coastal dune, and coastal scrub habitats. Occurs between 0 and 495 feet (0 to 150 meters). Blooms January to July (August).
Los Angeles sunflower *Helianthus nuttallii* ssp. *parishii*	Federal: None State: None CRPR: 1A	Found in coastal salt and freshwater marshes and swamps. Occurs between 32 and 5,005 feet (10 to 1,525 meters). Blooms August to October.

Common Name ***Scientific Name*[2]**	**Status[3]**	**General Habitat Description[4]**
vernal barley *Hordeum intercedens*	Federal: None State: None CRPR: 3.2	Found in coastal dune, coastal scrub, valley and foothill grassland, and vernal pool habitats. Occurs between 16 and 3,280 feet (5 to 1,000 meters). Blooms March to June.
mesa horkelia *Horkelia cuneata* ssp. *puperula*	Federal: None State: None CRPR: 1B.1	Prefers sandy or gravelly sites in chaparral, cismontane woodland, and coastal scrub habitats. Occurs between 230 to 2,660 feet (70 to 810 meters). Blooms February to September.
southern California black walnut *Juglans californica*	Federal: None State: None CRPR: 4.2	Found in alluvial sites in chaparral, cismontane woodland, coastal scrub, and riparian woodland habitats. Occurs between 164 and 2,955 feet (50 to 900 meters). Blooms March to August.
southwestern spiny rush *Juncus acutus* ssp. *leopoldii*	Federal: None State: None CRPR: 4.2	Found in mesic coastal dunes, alkaline meadows and seeps, and coastal salt marshes and swamps. Occurs between 9 and 2,950 feet (3 to 900 meters). Blooms (March) May to June.
Coulter's goldfields *Lasthenia glabrata* ssp. coulteri	Federal: None State: None CRPR: 1B.1	Found in coastal salt marshes and swamps, playas, and vernal pools. Occurs between 3 and 4005 feet (1 to 1,220 meters). Blooms February to June.
fragrant pitcher sage *Lepechinia fragrans*	Federal: None State: None CRPR: 4.2	Found in chaparral habitats. Occurs between 65 and 4,300 feet (20 to 1,310 meters). Blooms March to October.
Robinson's pepper- grass *Lepidium virginicum* var. *robinsonii*	Federal: None State: None CRPR: 4.3	Chaparral or coastal scrub habitats. Occurs between 5 to 2,905 feet (1 to 885 meters). Blooms January to July.
ocellated Humboldt lily *Lilium humboldtii spp. ocellatum*	Federal: None State: None CRPR: 4.2	Openings. Chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, riparian woodland. Occurs between 100 and 6,000 feet (30 to 1,800 meters). Blooms March to July (August).
San Gabriel linanthus *Linanthus concinnus*	Federal: None State: None CRPR: 1B.2	Prefers rocky openings in chaparral, lower montane coniferous forest, and upper montane coniferous forest. Occurs between 4,990 and 9,180 feet (1,520 to 2,800 meters). Blooms April to July.
Davidson's bush-mallow *Malacothamnus davidsonii*	Federal: None State: None CRPR: 1B.2	Chaparral, cismontane woodland, coastal scrub, and riparian woodland. Occurs between 610 and 2,800 feet (185 to 855 meters). Blooms June to January.
mud nama *Nama stenocarpa*	Federal: None State: None CRPR: 2B.2	Found in marshes, swamps, lake margins, and riverbanks. Occurs between 15 and 1645 feet (5 to 500 meters). Blooms January to July
Gambel's watercress *Nasturtium gambellii*	Federal: FE State: ST CRPR: 1B.1	Found in freshwater or brackish marshes and swamps. Occurs between 15 and 1085 feet (5 to 330 meters). Blooms April to October.
spreading navarretia *Navarretia fossalis*	Federal: FT State: None CRPR: 1B.1	Found in chenopod scrub, freshwater marshes and swamps, playas, and vernal pools. Occurs between 98 and 2,150 feet (30 to 655 meters). Blooms April to June.

Common Name ***Scientific Name*[2]**	**Status[3]**	**General Habitat Description[4]**
prostrate vernal pool navarretia *Navarretia prostrata*	Federal: None State: None CRPR: 1B.1	Found in mesic habitats, including coastal scrub, meadows and seeps, valley and foothill grassland, and vernal pools. Occurs between 9 and 3970 feet (3 to 1,210 meters). Blooms April to July.
California Orcutt grass *Orcuttia californica*	Federal: FE State: SE CRPR: 1B.1	Found in vernal pools. Occurs between 145 and 7105 feet (45 to 2,165 meters). Blooms April to August.
Hubby's phacelia *Phacelia hubbyi*	Federal: None State: None CRPR: 4.2	Prefers gravelly, rocky, or talus sites in chaparral, coastal scrub, and valley and foothill grassland habitats. Occurs between 0 and 3280 feet (0 to 1,000 meters). Blooms April to July.
south coast branching phacelia *Phacelia ramosissima* var. *austrolitoralis*	Federal: None State: None CRPR: 3.2	Prefers sandy or rocky areas in chaparral, coastal dune, coastal scrub, and coastal salt marsh and swamp habitats. Occurs between 15 and 985 feet (5 to 300 meters). Blooms March to August.
Brand's star phacelia *Phacelia stellaris*	Federal: None State: None CRPR: 1B.1	Inhabits coastal dune and coastal scrub habitats. Occurs between 3 and 1,315 feet (1 to 400 meters). Blooms March to June
Ballona cinquefoil *Potentilla multijuga*	Federal: None State: None CRPR: 1A	Found in brackish meadows and seeps. Occurs between 0 and 7 feet (0 to 2 meters). Blooms June to August.
white rabbit-tobacco *Pseudognaphalium leucocephalum*	Federal: None State: None CRPR: 2B.2	Prefers sandy, gravelly areas in chaparral, cismontane woodland, coastal scrub, or riparian woodland habitats. Occurs between 0 to 6890 feet (0 to 2,100 meters). Blooms (July) August to November (December).
Nuttall's scrub oak *Quercus dumosa*	Federal: None State: None CRPR: 1B.1	Prefers sandy and clay loam soils in closed-cone coniferous forest, chaparral, and coastal scrub habitats. Occurs between 49 and 1,310 feet (15 to 400 meters). Blooms February to April (May to August).
San Gabriel oak *Quercus durata* var. *gabrielensis*	Federal: None State: None CRPR: 4.2	Found in chaparral and cismontane woodland habitat. Occurs between 1,475 and 3,280 feet (450 to 1,000 meters). Blooms April to May.
Engelmann oak *Quercus engelmannii*	Federal: None State: None CRPR: 4.2	Found in chaparral, cismontane woodland, riparian woodland, and valley and foothill grassland habitats. Occurs between 165 and 4,265 feet (50 to 1,300 meters). Blooms March to June.
Parish's gooseberry *Ribes divaricatum* var. *parishii*	Federal: None State: None CRPR: 1A	Inhabits riparian woodland habitats. Occurs between 210 and 985 feet (65 to 300 meters). Blooms February to April.

Common Name *Scientific Name*[2]	Status[3]	General Habitat Description[4]
Coulter's matilija poppy *Romneya coulteri*	Federal: None State: None CRPR: 4.2	Often found in burns in chaparral or coastal scrub habitats. Occurs between 65 to 3940 feet (20 to 1,200 meters). Blooms March to July (August).
Parish's rupertia *Rupertia rigida*	Federal: None State: None CRPR: 4.3	Found in chaparral, cismontane woodland, lower montane coniferous forest, meadows and seeps, pebble plain, and valley and foothill grassland habitats. Occurs between 2,296 to 8,202 feet (700 to 2,500 meters). Blooms June to August.
salt spring checkerbloom *Sildalcea neomexicana*	Federal: None State: None CRPR: 2B.2	Prefers alkaline or mesic areas in chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub, and playa habitats. Occurs between 45 and 5020 feet (15 to 1530 meters). Blooms March to June.
western bristly scaleseed *Spermolepis lateriflora*	Federal: None State: None CRPR: 2A	Found in rocky or sandy soils in Sonoran desert scrub habitat. Occurs between 1,205 and 2,210 feet (365 to 670 meters). Blooms March to April.
estuary seablite *Suaeda esteroa*	Federal: None State: None CRPR: 1B.2	Found in coastal salt marshes and swamps. Occurs between 0 and 20 feet (0 to 5 meters). Blooms (May) June to October (January).
woolly seablite *Suaeda taxifolia*	Federal: None State: None CRPR: 4.2	Found in coastal bluff scrub, coastal dunes, and coastal salt marshes and swamps. Occurs between 0 and 165 feet (0 to 50 meters). Blooms January to December.
San Bernadino aster *Symphyotrichum defoliatum*	Federal: None State: None CRPR: 1B.2	Found near ditches, streams, and springs in cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, marshes and swamps, and vernally mesic valley and foothill grassland habitats. Occurs between 6 and 6700 feet (2 to 2040 meters). Blooms July to November (December).
Greata's aster *Symphyotrichum greatae*	Federal: None State: None CRPR: 1B.3	Mesic sites in broad-leafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, and riparian woodland. Occurs between 980 and 6,590 feet (300 to 2,010 meters). Blooms June to October.
Sonoran maiden fern *Thelypteris puberula* var. *sonorensis*	Federal: None State: None CRPR: 2B.2	Found in meadows and seeps. Occurs between 165 and 2,001 feet (50 to 610 meters). Blooms January to September.
Natural Vegetation Communities		
California Walnut Woodland	CNDDB	
Riversidian Alluvial Fan Sage Scrub	CNDDB	
Southern Coast Live Oak Riparian Forest	CNDDB	
Southern Coastal Salt Marsh	CNDDB	
Southern Cottonwood Willow Riparian Forest	CNDDB	
Southern Dune Scrub	CNDDB	
Southern Sycamore Alder Riparian Woodland	CNDDB	
Walnut Forest	CNDDB	

[1] Special-status plant species and natural vegetation communities known from the CNDDB and CNPS to occur on the Hollywood and surrounding eight quadrangles.

[2] Nomenclature for special-status plant species conforms to CNPS.

[3] Sensitivity Status Codes

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

[4] General Habitat Descriptions from CNDDB and CNPS.

TABLE B. SPECIAL-STATUS WILDLIFE SPECIES

Common Name *Scientific Name*[2]	Status[3]	General Habitat Description[4]
Invertebrates		
Crotch bumble bee *Bombus crotchii*	Federal: None State: SC Other: CNDDB	Inhabit open grassland and scrub habitats. Utilize a wide variety of flowering plants.
Belkin's dune tabanid fly *Brennania belkini*	Federal: None State: None Other: CNDDB	Occurs in salt marsh habitats.
Busck's gallmoth *Carolella busckana*	Federal: None State: None Other: CNDDB	Inhabits sand dunes habitats. Requires California brittlebush (*Encelia californica*) as larval food source.
sandy beach tiger beetle *Cicindela hirticollis gravida*	Federal: None State: None Other: CNDDB	Burrow in moist sand in coastal habitats, including sand dunes and beaches.
senile tiger beetle *Cicindela senilis frosti*	Federal: None State: None Other: CNDDB	Inhabit coastal mud flats, salt flats, salt marshes, and inland alkali mud flats.
globose dune beetle *Coelus globosus*	Federal: None State: None Other: CNDDB	Found in coastal dune habitats.
monarch-California overwintering population *Danaus plexippus* pop. 1	Federal: None State: None Other: CNDDB	Roost in groves of eucalyptus (*Eucalyptus* sp.), Monterey cypress (*Hesperocyparis macrocarpa*), and Monterey pines (*Pinus radiata*).
Henne's eucosman moth *Eucosma hennei*	Federal: None State: None Other: CNDDB	Inhabits undisturbed sand dunes, including open to moderately vegetated areas. Requires *Phacelia* sp. as larval food source.
El Segundo blue butterfly *Euphilotes battoides allyni*	Federal: FE State: None	Found in sand dunes or areas with sandy soils. Requires coast buckwheat (*Eriogonum parvifolium*) as its obligate host plant. Distribution is limited to several isolated populations in Los Angeles and Santa Barbara Counties.
Lange's El Segundo Dune weevil *Onychobaris langei*	Federal: None State: None Other: CNDDB	Occurs in El Segundo dunes in Los Angeles County.
saltmarsh skipper *Panoquina errans*	Federal: None State: None Other: CNDDB	Inhabits salt marshes and other wetland habitats; occasionally found in sand dunes. Requires saltgrass (*Distichlis spicata*) as larval food source.
Gertsch's socalchemmis spider *Socalchemmis gertschi*	Federal: None State: None Other: CNDDB	Occurs in coastal sage scrub habitat.

Common Name *Scientific Name*[2]	Status[3]	General Habitat Description[4]
Riverside fairy shrimp *Streptocephalus wootoni*	Federal: FE State: None	Inhabits vernal pools, ponds, and other ephemeral pool-like bodies of water.
Dorothy's El Segundo dune weevil *Trigonoscuta dorothea dorothea*	Federal: None State: None Other: CNDDB	Found in coastal sand dunes.
California brackishwater snail *Tryonia imitator*	Federal: None State: None Other: CNDDB	Occurs in brackish salt marshes.
Amphibians		
southern mountain yellow-legged frog *Rana muscosa*	Federal: FE State: SE Other: WL	In the Sierra Nevada, occurs near streams, lakes, and ponds in montane riparian, lodgepole pine, subalpine conifer, and wet meadow habitats. In southern California, inhabits streams in ponderosa pine, montane hardwood-conifer, and montane riparian habitats.
western spadefoot *Spea hammondii*	Federal: None State: None Other: SSC	Inhabits grassland, oak woodland, coastal sage scrub, and chaparral vegetation in washes, floodplains, alluvial fans, playas, and alkali flats.
Coast Range newt *Taricha torosa*	Federal: None State: None Other: SSC	Prefers valley-foothill hardwood, valley-foothill hardwood-conifer, coastal scrub, and mixed chaparral habitats. Occasionally found in annual grassland and mixed conifer habitats. Require ponds, reservoirs, or stream pools for breeding. Occurs between 0 and 6,000 feet (0 to 1,830 meters).
Reptiles		
California legless lizard *Anniella* spp.	Federal: None State: None Other: SSC	Occurs in moist warm loose soils in sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks. Often under leaf litter or other surface objects.
southern California legless lizard *Anniella stebbinsi*	Federal: None State: None Other: SSC	Occurs in moist warm loose soils in sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks. Often under leaf litter or other surface objects.
California glossy snake *Arizona elegans occidentalis*	Federal: None State: None Other: SSC	Most common is desert habitats but also occur in chaparral, sagebrush, valley-foothill hardwood, pine-juniper, and annual grassland.

Common Name ***Scientific Name[2]***	**Status[3]**	**General Habitat Description[4]**
coastal whiptail *Aspidoscelis tigris stejnegeri*	Federal: None State: None Other: SSC	Occurs in coastal sage scrub, chaparral, riparian areas, woodlands, and rocky areas.
western pond turtle *Emys marmorata*	Federal: None State: None Other: SSC	Occurs in aquatic water bodies including flowing rivers and streams, permanent lakes, ponds, reservoirs, settling ponds, marshes and other wetlands. Semi- permanent water bodies such as stock ponds, vernal pools and seasonal wetlands can also be utilized on a temporary basis.
coast horned lizard *Phrynosoma blainvillii*	Federal: None State: None Other: SSC	Inhabits coastal sage scrub and chaparral in arid and semiarid climates. Prefers friable, rocky, or shallow sandy soils.
Birds		
tricolored blackbird *Agelaius tricolor*	Federal: None State: ST Other: SSC	Inhabits annual grasslands, wet and dry vernal pools, seasonal wetlands. Frequently found in and around agricultural areas.
southern California rufous-crowned sparrow *Aimophila ruficeps canescens*	Federal: None State: None Other: WL	Inhabits broken sage scrub and scrub-grassland habitats.
burrowing owl *Athene cunicularia*	Federal: None State: None Other: SSC	Inhabits open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, California ground squirrel (*Otospermophilus beecheyi).*
Swainson's hawk *Buteo swainsoni*	Federal: None State: ST	Typical habitat is open desert, grassland, or cropland containing scattered, large trees or small groves. Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Forages in adjacent grasslands or suitable grain or alfalfa fields, or livestock pastures.
western snowy plover *Charadrius alexandrinus nivosus*	Federal: FT State: None Other: SSC	Typically breeds above the high tide line on coastal beaches, dune-backed beaches, sparsely-vegetated dunes, beaches at creek and river mouths, and salt pans at lagoons and estuaries. Non-breeding habitat includes bluff-backed beaches, salt pond levees, dry salt ponds, river bars, and dredged material disposal sites. cor

Common Name ***Scientific Name*[2]**	**Status[3]**	**General Habitat Description[4]**
western yellow-billed cuckoo *Coccyzus americanus occidentalis*	Federal: FT State: SE	Occurs in valley foothill and desert riparian habitats.
yellow rail *Coturnicops noveboracensis*	Federal: None State: None Other: SSC	Requires sedge marshes or meadows with moist soil or shallow standing water for breeding. Non-breeding populations occupy wet meadows and coastal tidal marshes.
southwestern willow flycatcher *Empidonax traillii extimus*	Federal: FE State: SE	Inhabits riparian woodlands in southern California. Nests in extensive thickets of low, dense willows on edge of wet meadows, ponds, or backwaters, between 2,000 and 8,000 feet (610 to 2,440 meters). Dense willow thickets are required for nesting and roosting. Low, exposed branches are used for singing posts/hunting perches.
American peregrine falcon *Falco peregrinus anatum*	Federal: Delisted State: Delisted Other: FP	Frequents bodies of water in open areas with cliffs and canyons nearby for cover and nesting. Also nests in urban areas atop tall structures.
California black rail *Laterallus jamaicensis coturniculus*	Federal: None State: ST Other: FP	Inhabits saline, brackish, and fresh emergent wetlands.
Belding's savannah sparrow *Passerculus sandwichensis beldingi*	Federal: None State: SE	Inhabits southern coastal wetlands.
California brown pelican *Pelecanus occidentalis californicus*	Federal: Delisted State: Delisted Other: FP	Found in estuarine, marine subtidal, and marine pelagic waters along the California coast. Primarily roosts on water or inaccessible rocks, though also known to utilize mudflats, sandy beaches, wharfs, and jetties.
coastal California gnatcatcher *Polioptila californica californica*	Federal: FT State: None Other: SSC	Obligate, permanent resident of coastal sage scrub below 2.500 feet (760 meters) in southern California. Inhabits low, coastal sage scrub in arid washes, on mesas and slopes.
bank swallow *Riparia riparia*	Federal: None State: ST	Found in riparian and other lowland habitats during spring and fall. Occupy riparian, lacustrine, and coastal areas with vertical banks, bluffs, and cliffs with fine-textured or sandy soils during summer, where they dig nesting holes.
California least tern *Sternula antillarum browni*	Federal: FE State: SE Other: FP	During summer, breed along marine and estuarine shores and feed in nearby shallow, estuarine waters. After breeding, found at lacustrine waters near coast.

Common Name *Scientific Name*[2]	Status[3]	General Habitat Description[4]
least Bell's vireo *Vireo bellii pusillus*	Federal: FE State: SE	Summer resident of southern California in low riparian habitat in vicinity of water or in dry river bottoms, below 2,000 feet (610 meters).
Mammals		
pallid bat *Antrozous pallidus*	Federal: None State: None Other: SSC, WBWG-H	Deserts, grasslands, shrublands, woodlands and forests. Most common in open, dry habitats with rock areas for roosting. Roosts must protect bats from high temperatures; very sensitive to disturbance of roosting sites.
western mastiff bat *Eumops perotis californicus*	Federal: None State: None Other: SSC, WBWG-H	Known from open semiarid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grassland, and chaparral. Roosts in crevices in cliff faces, high buildings, trees, and tunnels. Roost locations are generally high above the ground providing a 3-meter minimum clearance below the entrance for flight. Requires large open-water drinking sites.
silver-haired bat *Lasionycteris noctivagans*	Federal: None State: None Other: CNDDB, WBWG-M	Common, but erratic in abundance. During spring and fall migrations the silver-haired bat may be found anywhere in California. Primarily a coastal and montane forest dweller feeding over streams, ponds, and open brushy areas. Roosts in hollow trees, beneath exfoliating bark, abandoned woodpecker holes and rarely under rocks. Needs drinking water.
hoary bat *Lasiurus cinereus*	Federal: None State: None Other: CNDDB, WBWG-M	May be found at any location in California. Winters along the coast and in southern California, breeding inland and north of the winter range. During migration, may be found at locations far from the normal range. Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees, feeds primarily on moths; requires water.
western yellow bat *Lasiurus xanthinus*	Federal: None State: None Other: SSC, WBWG-H	Found in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats. Roosts in dead palm fronds and other trees, sometimes in urban areas.
south coast marsh vole *Microtus californicus stephensi*	Federal: None State: None Other: SSC	Occurs in wetland habitats and associated grasslands along the coast.
San Diego desert woodrat *Neotoma lepida intermedia*	Federal: None State: None Other: SSC	Coastal scrub of southern California from San Diego County to San Luis Obispo County. Moderate to dense canopies preferred. They are particularly abundant in rock outcrops and rocky cliffs and slopes.

Common Name ***Scientific Name*[2]**	**Status[3]**	**General Habitat Description[4]**
pocketed free-tailed bat *Nyctinomops femorosaccus*	Federal: None State: None Other: SSC, WBWG-M	Occurs in pinyon-juniper woodlands, desert scrub, desert succulent scrub, desert riparian, desert wash, alkali desert scrub, Joshua tree, and palm oasis habitats. Roost in rock crevices, caverns, or buildings.
big free-tailed bat *Nyctinomops macrotis*	Federal: None State: None Other: SSC, WBWG-MH	Low-lying arid hilly areas in Southern California to about 6,000 feet. Roosts in crevices and cliffs, buildings, and cavities in trees.
southern grasshopper mouse *Onychomys torridus ramona*	Federal: None State: None Other: SSC	Common in arid desert habitats of the Mojave Desert and southern Central Valley of California. Alkali desert scrub and desert scrub habitats are preferred, with somewhat lower densities expected in other desert habitats, including succulent shrub, wash, and riparian areas. Also occurs in coastal scrub, mixed chaparral, sagebrush, low sage, and bitterbrush habitats. Uncommon in valley foothill and montane riparian, and in a variety of other habitats.
Los Angeles pocket mouse *Perognathus longimembris brevinasus*	Federal: None State: None Other: SSC	Lower elevation grasslands and coastal sage communities in and around the Los Angeles Basin; open ground with fine sandy soils; may not dig extensive burrows, instead may be found hiding under weeds and dead leaves.
Pacific pocket mouse *Perognathus longimembris pacificus*	Federal: FE State: None Other: SSC	Occurs in coastal strand, coastal dune, river alluvium, and coastal sage scrub habitats on marine terraces. Often occur in areas with fine-grain, sandy, or gravelly soils.
southern California saltmarsh shrew *Sorex ornatus salicornius*	Federal: None State: None Other: SSC	Inhabits salt marshes and other wetland habitats. Prefers areas dominated by pickleweed (*Salicornia* sp.).
American badger *Taxidea taxus*	Federal: None State: None Other: SSC	Uncommon, permanent resident found throughout most of the state, except in the northern North Coast area. Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils.

[1] Special-status species known from the CNDDB to occur on the Hollywood and surrounding eight quadrangles.

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

[3] Sensitivity Status Codes

Federal **FT** - Federally Threatened under Federal Endangered Species Act (FESA)
FE - Federally Endangered under FESA
State **ST** - State Threatened under California Endangered Species Act (CESA)

SE - State Endangered under CESA
SC – State Candidate for listing under CESA

Other

SSC – Designated as a Species of Special Concern by CDFW
WL – Designated as a Watch List species by CDFW
CNDDB - Tracked by CDFW in the California Natural Diversity Data Base or considered locally sensitive
WBWG-H - Designated by the Western Bat Working Group (WBWG 2017) as High Priority - species that are imperiled or are at high risk of imperilment
WBWG-M - Designated by the WBWG (2017) as Medium Priority – a level of concern that should warrant closer evaluation, more research, and conservation actions of both species and possible threats.

[4] General Habitat Descriptions from CNDDB.

APPENDIX C

Cultural, Paleontological, and Tribal Cultural Resources Technical Memorandum

AECOM
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Cultural, Paleontological, and Tribal Cultural Resources Technical Memorandum

To	Los Angeles Department of Water Power Water Engineering & Technical Services Water Master Planning
Subject	Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System Project
From	Bradley Peacock, M.A. Monica Mello, M.A. Marc A. Beherec, Ph.D., RPA
Date	February 17, 2020

Attachment 1 – Project Area Map
Attachment 2 – Sacred Lands File Search
Attachment 3 – DPR 523 Forms

Introduction

This technical memorandum describes the potential impact to cultural and tribal cultural resources associated with the Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System Project (proposed project) to be located in the Silver Lake neighborhood of the City of Los Angeles (Council District 13), Los Angeles County, California. The proposed project consists of installations of an aeration and recirculation system to manage algae formation and the associated odors to ensure compliance with the 2006 Silver Lake Reservoir Complex Storage Replacement Project Environmental Impact Report (CH2M Hill 2006). The project site consists of concrete pad for the aeration system south of the chlorination station and recirculation system to be located by the Silver Lake outlet tower. The Silver Lake Reservoir Complex (SLRC) is recommended eligible for listing in the California Register of Historical Resources (CRHR) as a Historic District in 2004 (Greenwood and Associates 2004). The SLRC Historic District includes 15 contributing features with a period of significance spanning 1906 to 1953. As discussed in this memorandum, the proposed project will have no significant adverse impacts related to cultural resources or tribal cultural resources.

Cultural Setting

As a framework for discussing the types of cultural resources that might be encountered in the vicinity of the proposed project, the following section summarizes our current understanding of major prehistoric and historic developments in and around Los Angeles.

Prehistoric Overview

The earliest occupation of Southern California may be associated with the peoples who first colonized North America in the terminal Pleistocene and earliest Holocene (Arnold et al. 2004). These cultures are characterized by fluted points. Among Southern California's fluted points is a fluted obsidian point found in a stratified deposit beside an ancient lake bed in the mountains of eastern San Diego County (Kline and Kline 2007). Other fluted points have been reported at other locations in Santa Barbara and San Diego Counties (Rondeau 2009). Closest to the project area, the Farpoint Site (CA-LAN-451) in Malibu, Los Angeles County, has yielded a fluted point, and its excavator argues the site should be associated with the Clovis culture (Stickel 2008). Clovis is the

earliest universally recognized material culture in North America, and dates to approximately 11,500 radiocarbon years before present (B.P.).

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

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

The Late Prehistoric period, spanning from approximately 1500 years B.P. to the Spanish mission era, is the period associated with the florescence of contemporary Native American groups. The group occupying the southern Channel Islands and adjacent mainland areas of Los Angeles and Orange Counties came to be known as the Gabrielino, after Mission San Gabriel. They are reported to have been second only to their Chumash neighbors in terms of population size, regional influence, and degree of sedentism (Bean and Smith 1978). The boundary between these two groups is commonly believed to be in the area by Topanga Canyon, with the Chumash living along the beaches of Malibu up to the area of Paso Robles and the Gabrielino residing along the coastal stretches to the south. The Gabrielino are estimated to have numbered around 5,000 in the pre-contact period (Kroeber 1925). Maps produced by early explorers indicate the existence of at least 40 Gabrielino villages, but as many as 100 may have existed prior to contact with Europeans (Bean and Smith 1978; McCawley 1996; Reid 1939 [1852]). Groups in the San Fernando Valley were typically referred to by the Spanish as the *Fernadeño*, whose name was derived from nearby Mission San Fernando. The *Fernadeño* spoke a dialect of the Gabrielino tongue and were otherwise culturally identical to the Gabrielino (Bean and Smith 1978; Shipley 1978).

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

Historic Overview

Spanish explorers made brief visits to Gabrielino territory in 1542 and 1602, and on both occasions the two groups exchanged trade items (McCawley 1996). Sustained contact with Europeans did not commence until the onset of the Spanish Period, which began in 1769 when Gaspar de Portola and a small Spanish contingent began their exploratory journey along the California coast from San Diego to Monterey.

Gabrielino villages are reported by early explorers to have been most abundant near the Los Angeles River, in the area north of downtown known as the Glendale Narrows, and those areas along the river's various outlets into the sea. Among those villages north of downtown were *Maawnga* near Griffith Park; *Totongna* and *Kawengna* in the San Fernando Valley; *Hahamongna*, northeast of Glendale; and the village of *Yangna*, under present-day downtown Los Angeles. At the time of Portola's visit, the village of *Yangna* is reported to have

supported a population of at least 200 (Gumprecht 1999) and was later reported to have contained anywhere from 500 to 1,500 huts, implying an even greater population (Reid 1939 [1852]). The community of *Yangna* was located somewhere in the vicinity of the Los Angeles Civic Center, and, as McCawley notes, “is popularly regarded as the Indian precursor of modern Los Angeles” (McCawley 1996:57).

By the early 1800s, the majority of the surviving Gabrielino population had entered the mission system, either at Mission San Gabriel, founded in 1771, or at Mission San Fernando Ray de Espana, established in 1797. Other Native Americans worked at *El Pueblo de la Reyna de Los Angeles,* a secular community founded by colonists in 1781. Over time, the missions became self-sufficient through farming and selling cattle hides, tallow, and various fruit crops to the nearby Pueblo (Paddison 1999; Wright 1992). Mission life was utilized by the Spanish in a time when Native American traditional trade and political alliances were failing, and epidemics and subsistence instabilities were increasing. This lifestyle change brought significant negative consequences for Gabrielino health and cultural integrity (Jackson 1999).

The growth of the *El Pueblo de la Reyna de Los Angeles* became established after the Mexican empire gained independence and formed what would become the state of Alta California in 1821. The authority of the California missions gradually declined, culminating with their secularization in 1834. Although the Mexican government directed that each mission’s lands, livestock, and equipment be divided among its converts, the majority of these holdings quickly fell into non-Indigenous hands. Mission buildings were abandoned and quickly fell into decay. If mission life was difficult for Native Americans, secularization was typically worse. After two generations of dependence on the missions, they were suddenly disenfranchised. After secularization, “nearly all of the Gabrielinos went north while those of San Diego, San Luis, and San Juan overran this county, filling the Angeles and surrounding ranchos with more servants than were required” (Reid 1977 [1851]:104).

The first party of U.S. immigrants arrived in Los Angeles in 1841, although surreptitious commerce had previously been conducted between Mexican California and residents of the United States and its territories. As the possibility of a takeover of California by the United States loomed large, the Mexican government increased the number of land grants in an effort to keep the land in the hands of upper-class *Californios* like the Domínguez, Lugo, and Sepúlveda families (Wilkman and Wilkman 2006:14–17). Governor Pío Pico and his predecessors made more than 600 rancho grants between 1833 and 1846, putting most of the state’s lands into private ownership for the first time (Gumprecht 1999).

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

The discovery of gold in northern California led to an enormous influx of American citizens in the 1850s and 1860s, and these settlers rapidly displaced the old rancho families. In 1873, the U.S. government confirmed legal title to old Rancho ex-Mission San Fernando at 116,858.43 acres, the largest private land parcel in California. The Southern Pacific Railroad extended its line from San Francisco to Los Angeles in 1876, passing through the San Fernando Valley thanks to a new tunnel through Newhall Pass. Newcomers continued to pour into Los Angeles and the population nearly doubled between 1870 and 1880. The completion of the second transcontinental line, the Santa Fe, took place in 1886 causing a fare war, which drove fares to an unprecedented low. More settlers continued to head west and the demand for real estate skyrocketed. The city’s population rose from 11,000 in 1880 to 50,000 by 1890 (Meyer 1981:45).

In the mid-nineteenth century, the San Fernando Valley was filled with growing and dwindling cattle ranches due to unpredictable weather. This started to subside into the late nineteenth century but was not negated until pumping units and aqueducts were later utilized (Jorgensen 1988). During this time, a new route, known as the Santa Susana Pass was opened up to the east to bypass the older Devil’s Slide, linking San Fernando, Simi Valley, and the greater Los Angeles Basin together and becoming not only a well-traveled wagon route but the first automobile route to link the valleys. This opened the flood gates of an urban population boom within the San Fernando Valley in conjunction with what was already occurring within the greater Los Angeles Basin to the east (Bevill 2007). The creation of these passes was followed by a push of the San Fernando Valley to bring water from the Owens Valley to the north. Construction began in 1908, linking the Los Angeles Aqueduct into the San

Fernando Valley. This was to avoid depleting underground resources that were starting to plague the area due to this population explosion. Liquid fuel-powered well water pumps located throughout the area fell out of favor as water from the Los Angeles Aqueduct started to flow (Jorgensen 1988:121).

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

To ensure water supply to new developments, the city expanded its reservoir capacity in the first decade of the twentieth century. Ivanhoe Reservoir was completed in 1906; followed by the larger Silver Lake Reservoir in 1907 (Gumprecht 2001:98–99). As a result, the Silver Lake district witnessed a period of rapid growth due to the development of the reservoirs with its aesthetically pleasing and natural look of planted trees and lush native vegetation around the perimeter of the reservoir. The development attracted many of the city's elite during the 1920s and 1930s. The small district boosts a high concentration of Period Revivals representative of the architecture of the period.

Silver Lake Reservoir Complex History
The following historic context regarding the history of Silver Lake and the development of SLRC is excerpted from the *Silver Lake Reservoir Complex Storage Replacement Project Cultural Resources Assessment Report* (Greenwood and Associates 2004).

The southern portion of the SLRC site lies within the 4 square leagues of land set aside by the Spanish crown for establishment of the Pueblo de Los Angeles in 1781, while the northern half is within the historic boundaries of Rancho Los Feliz. The 1½-square-league rancho was granted to Vicente Feliz by the Spanish government in 1802. Juan Diego acquired the property prior to the American takeover, and received a patent for the 6,647 acres in April 1871. In 1882, J. Griffith, donor of Griffith Park, purchased Rancho Los Feliz.

An open ditch that was a part of the Rancho Los Feliz water supply system passed through the canyon now occupied by Silver Lake Reservoir by the mid-1800s. The ditch was acquired by the Los Angeles Canal and Reservoir Co which in turn, became part of the city's system in 1868 (Layne 1957:24, 39).

The Silver Lake area was known as "Ivanhoe" before the turn of the twentieth century. Reminded of the rolling green hills of his homeland, Scottish developer Hugo Reid named the area after the famous novel by Sir Walter Scott. Many of the streets in Silver Lake have Scottish names, or names that are related to characters from the novel, such as Herkimer, Rowena, Hawick, Kenilworth, and Ben Lomond. The Ivanhoe community, northwest of the SLRC site, included around a dozen homes when it was mapped in 1894 (United States Geological Survey 1894).

In the late 1800s, hunters journeyed to the area to seek game that was attracted to the natural ponding condition in Ivanhoe Canyon. Recognizing the value of the land, the Water Department began acquiring land for the SLRC in the 1880s when the surrounding area was primarily undeveloped. By the time the last parcel was acquired in 1904, the area was still largely uninhabited. With the addition of the reservoirs, this quickly changed.

Construction of Ivanhoe Reservoir was completed in 1906. Silver Lake Reservoir, named for Herman Silver, a member of Los Angeles' first Board of Water Commissioners, was finished the following year.

City planners soon recognized the potential of a uniquely situated residential development overlooking the reservoirs and made substantial investment in underground utilities and concrete streets. In the 1920s and 1930s private developers were encouraged by the City to build and they were attracted by the rolling hills and blue water views of the focal point that is Silver Lake and Ivanhoe Reservoirs. Probably the most well-known developer was silent film star Antonio Moreno. He modeled his development (the Moreno Highlands) after a Mediterranean village he had visited. His landmark home, the Canfield-Moreno Estate, set the architectural theme for many of the homes in the hills on the west side of the reservoir.

Silver Lake and adjacent Edendale and Echo Park areas were home to many early motion picture studios. The Mack Sennett Studios, and Tom Mix, Disney, Monogram, and Talmadge Studios were located there and drew creative people to the area. Many locations in Silver Lake appeared in early motion pictures. For example, the famous Laurel and Hardy short film "The Music Box" was filmed here, and many of the Keystone Cops chase scenes were shot along Glendale Boulevard. Not only was the area home to many of the early studios, numerous film makers, actors, and directors also lived in Silver Lake. These included Gloria Swanson, Laurel and Hardy, Antonio Moreno, and many others.

“From the mid-1920s through the early 60s, Silver Lake was a showcase for some of California’s best known and most innovative and influential architects” (LAT 1984). The area has been noted as having the greatest density of high-style historic residences of any in the city. The neighborhood’s distinctive character is established by its rich mixture of area residences designed in Mediterranean and other Revival styles of the1920s and 1930s, integrated with important works by major figures in the Modern movement, including Richard Neutra, Rudolf Schindler, Rafael Soriano, Gregory Ain, and John Lautner.

Planning for reservoirs at Ivanhoe was one of the first projects undertaken by the newly named Los Angeles Department of Water Superintendent, William Mulholland. Conceived in 1903, Ivanhoe and Silver Lake Reservoirs were to hold 1 billion gallons of surplus water collected during wet months. In September 1905, City voters approved a $1.5 million bond measure to finance the Los Angeles-Owens River Aqueduct project by an overwhelming popular mandate. “From that date on the Water Department bent every effort, both in planning and building within the city limits, for the accommodation and use of the additional water to be received from its new source of supply” (Layne 1957:75). Excavation work began on Ivanhoe Reservoir in November 1905. It was to occupy the upper (northern) end of the site planned for the larger Silver Lake Reservoir. Ivanhoe Reservoir was completed in May 1906, and in August of that year, work was begun on Silver Lake Reservoir just below it.

The method employed to construct Silver Lake Reservoir was unique. Under Superintendent Mulholland’s plans and supervision, an innovative hydraulic sluicing technique adapted from the mining industry was used to dredge soil from what would become the lake bed and move the material to form the earthen dam to create the reservoir. This was the first time the method had ever been used in the United States. The process proved so successful that engineers came from all parts of the country to study the method. Mulholland served as a consultant on numerous hydraulic fill dams built between 1910 and 1930, including the enormous Gatun Dam in the Panama Canal (Rogers 1995:23). Until 1923, all of the Los Angeles Bureau of Water Works and Supply reservoirs were earthen embankments, built using Mulholland’s hydraulic sluicing techniques. Silver Lake Reservoir was completed in 1907 with a capacity of 773,000,000 gallons (Layne 1957:85).

Regular improvements to the reservoir complex continued into the 1940s. As part of their water conservation efforts following Owens Valley Aqueduct approval, the Water Department constructed a wooden roof over the new Ivanhoe Reservoir to decrease evaporation in 1911. The concrete pile-supported roof required 800 barrels of cement and 750,000 feet of lumber. It remained until 1938, when it was removed “for health and maintenance reasons” (Layne 1957:87; supt. ltr.). Silver Lake has always been an open reservoir.

Prior to 1921, the reservoirs were used for reserve supply only, but the surrounding area’s rapid growth through 1913 through 1919 necessitated its improvement for use as a domestic supply distribution reservoir (Layne 1957:184). Historically, water is supplied to the reservoir from the river supply conduit through a 60-inch inlet line to Ivanhoe Reservoir, and then into Silver Lake.

Beginning in 1922, fences were placed around the reservoirs, principally to keep out violators of the City’s Fishing, Bathing, Boating, and Hunting ordinance. Besides a fence, a diversion ditch, later replaced by a wall, was constructed around Silver Lake Reservoir, which had received drainage from the surrounding hills that were fast becoming covered with residences (Layne 1957:185).

An outlet gate tower was added to Silver Lake in 1937. Located on the site of the present tower, the Classical Revival style structure complemented the existing chlorine plant below the dam. In 1944, work commenced on a new river supply conduit. Formed of some 41,260 feet of reinforced concrete pipe, the conduit delivered aqueduct water from the North Hollywood Pumping Plant to the Silver Lake reservoirs. It was put into service in March 1949. In 1945, the reservoirs were drained, the earth-filled dams improved, and the Ivanhoe Inlet Tower constructed (Layne 1957:299).

Between 1950 and 1953, a $1.5 million program of improvements was undertaken at Silver Lake and Ivanhoe Reservoirs. Far more extensive than any previous effort, the reservoirs were drained and deepened, their sides were regraded and surfaced with asphaltic cement to reduce plant growth and erosion from wave action, and the dams were raised 2 feet. A 60-inch bypass pipeline was added at the bottom of the reservoirs, and a new 66-inch outlet line was built from the Silver Lake dam south along West Silver Lake Drive. Additionally, a portion of Silver Lake Reservoir known as the "East Cove," where water historically tended to stagnate, was filled in. That area, as well as areas nearest the reservoirs affected by construction, was re-landscaped to restore their natural appearance. The reservoirs were refilled and returned to service in December 1953 (LADWP 1950; 1952; 1953).

Most recently in 1976, after a dam of similar design suffered severe damage in the 1971 Sylmar earthquake, Silver Lake dam was reconstructed and seismically strengthened. The outlet tower control house and bridge were renovated at that time as well (Greenwood and Associates 2004).

Archival Research

Archival research of the project site was conducted by AECOM archaeologist Alec Stevenson, M.A., RPA, at the South Central Coastal Information Center (SCCIC) housed at California State University, Fullerton, on July 18, 2018. The research focused on the identification of previously recorded cultural resources within a 0.5-mile radius of the proposed project footprint. The archival research included review of previously recorded archaeological site records and reports, historic site and property inventories, and historic maps. Inventories of the National Register of Historic Places (NRHP), the CRHR, the California State Historic Resources Inventory (HRI), California Historical Landmarks and Points of Interest, and the list of City of Los Angeles Historic-Cultural Monuments (LAHCMs) were also reviewed to identify cultural resources within a 0.5-mile radius of the project area.

Research at the SCCIC was supplemented with additional research in other archives, appropriate online repositories, and AECOM's holdings. Archival research included a Sacred Lands File (SLF) search and Native American contact program. Finally, geologic maps and the results of past paleontological work in the vicinity were consulted to establish the area's paleontological sensitivity.

Previous Cultural Resources Investigations Reports

A total of 20 previous cultural resources investigations documented at the SCCIC have been conducted within 0.5 mile of the project area (Table 1). These investigations include surveys, records searches, and submissions. One of these studies overlapped 100% of the planned project area.

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

Author	Report #	Description	Date
Brown, Joan C.	LA-02099*	Cultural Resources Reconnaissance of Nine Reservoirs for the City of Los Angeles, Los Angeles County, California	1990
Brechbiel, Brant A.	LA-04326	Cultural Resources Records Search and Literature Review Report for a Pacific Bell Mobile Services Telecommunications Facility: LA 327-21 in the City of Los Angeles, California	1998
Duke, Curt	LA-04708	Cultural Resource Assessment for Pacific Bell Mobile Services Facility La 434-01, in the County of Los Angeles, California	1999
Duke, Curt	LA-05353	Cultural Resource Assessment for Pacific Bell Wireless Facility Sm 005-01, County of Los Angeles, California	2000
Smith, Philomene C.	LA-05414	Negative Archaeological Survey Report:07-LA-2 Kp22.5/36.7-170-21370k	2000
Bonner, Wayne H.	LA-07341	Cultural Resource Records Search and Site Visit Results for Cingular Telecommunications Facility Candidate LA-327-01 (el-030-01) Pension Building, 2220 Hyperion Avenue, Los Angeles, Los Angeles County, California	2005
Foster, John M.	LA-07347	Archaeological Investigation for Silver Lake Branch Library City of Los Angeles (w.o. E1700474)	2005

Author	Report #	Description	Date
Bonner, Wayne H.	LA-07356	Records Search Results for Cingular Wireless Site Sm-005-01 (the North Silverlake/DWP Site), Located at 2485 1/2 Armstrong Ave. Los Angeles, Los Angeles County, California	2002
Allen, Kathleen C.	LA-07374	Archaeological Records Search for Bechtel Project (#950014088b), St. Theresa Church of Avila Fargo, Los Angeles, California	2003
Alexandrowicz, John S.	LA-07392	An Historical Resources Investigation at St. Teresa of Avila Church, 2210 Fargo Street, Los Angeles County, California	2003
McKenna, Jeanette A.	LA-08254	Results of a Phase 1 Cultural Resources Investigation of the Proposed Los Angeles Department of Water and Power River Supply Conduit, Los Angeles County, California	2004
Bonner, Wayne H.	LA-09200	Cultural Resources Records Search and Site Visit Results for T-Mobile Candidate SV11419D (Von Pelt Place R.O.W. #22849), 2910-2921 Von Pelt Place, Los Angeles, Los Angeles County, California	2007
Bonner, Wayne H.	LA-09204	Cultural Resources Records Search and Site Visit Results for T-Mobile Candidate SV11423A (St. Teresa of Avila), 2210 Fargo Street, Los Angeles, Los Angeles County, California	2007
Wlodarski, Robert J.	LA-09315	Submittal of Form 621 for Section 106 Review	2006
Bonner, Wayne	LA-11587	Cultural Resources Records Search and Site Visit Results for AT&T Mobility, LLC Candidate LA0292-01, USID 46332 (Fitzpatrick Realty), 1639 Silver Lake Boulevard, Los Angeles, Los Angeles County, California	2011
Billat, Lorna	LA-11904	New Tower Submission Packet, PROW Glendale	2012
Bonner, Wayne	LA-11938	Cultural Resources Records Search and Site Visit Results for T-Mobile West, LLC Candidate SV11423A (11423 St. Teresa Avila LAARCH), 2210 Fargo Street, Los Angeles, Los Angeles County, California	2012
Unknown	LA-12399	Echo Park, Historical & Cultural Resources Survey	1981
Bonner, Wayne, and Crawford, Kathleen	LA-12413	Cultural Resources Records Search and Site Visit Results for T-Mobile West, LLC Candidate SV11062C (Griffith Park Cleaners) 2619 Hyperion Avenue, Los Angeles, Los Angeles County, California	2013
Anderson, Katherine, and Gonzalez, Matthew	LA-12800	Los Angeles Department of Public Works Stairway and Walkway Lighting Unit 7 Project (W.O. L1350078) City of Los Angeles, California, Historic and Archaeological Resources Survey and Evaluation	2014

*Indicates a study that overlaps the project area.

In addition to the reports reviewed at the SCCIC, the Los Angeles Department of Water Power (LADWP) provided AECOM with an additional cultural resources study, *Silver Lake Reservoir Complex Storage Replacement Project Cultural Resources Assessment Report* (Greenwood and Associates 2004). That report details the results of a cultural resources survey which examined 100% of the Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System Project area. The investigation did not identify any archaeological resources, but documented Silver Lake and Ivanhoe Reservoirs. This study found the SLRC, composed of both Ivanhoe Reservoir and Silver Lake Reservoir and surrounding City-owned property, eligible for listing in the CRHR as a historic district.

Previously Recorded Cultural Resources

The SCCIC records search identified eight previously recorded cultural resources mapped within 0.5 mile of the project area (Table 2). Of the resources, six are historic buildings and two are stairways. No prehistoric sites or resources of Native American origin are documented within 0.5 mile of the project area. None of the resources are located within the project area itself.

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

Primary Number (P-19-)	Historic Name/Description	Time Period	Eligibility Evaluation
19-166820	Garbutt Residence, 1809 Apex Avenue	1926–1928	Listed in NRHP
19-173327	St Teresa of Avila Church, 2210 Fargo Street	1920–1930	Recommended eligible for listing in NRHP
19-187000	Neutra Office Building, 2379 Glendale Boulevard	1950	Listed in NRHP
19-188203	Bechtel Telecommunications, 1639 Silver Lake Boulevard	1930–1940	Recommended not eligible for CRHR and NRHP
19-188871	Richard and Dion Neutra VDL Research House, 2300 Silver Lake Boulevard	1932	Recommended eligible for CRHR and NRHP
19-190628	T-Mobile West LLC SV11062C/Griffith Park Cleaners, 2615-2619 Hyperion Avenue	1975	Recommended not eligible for NRHP; unevaluated for CRHR
19-190943	Kenilworth and Moreno to West Silver Lake Drive Stairway	1926	Recommended not eligible for CRHR and NRHP
19-190944	Linda Stairway	1919	Listed in CRHR and NRHP

California State Historic Resources Inventory

Study of the California Office of Historic Preservation (OHP)'s HRI focused on properties within 0.5 mile of the project area that faced streets bordering the project area. The HRI lists 4 historic resources within 0.5 mile of the project site (Table 3). Two are single-family residences dating to the first half of the twentieth century. One is the Silver Lake recreation facility.

Table 3. Properties on the OHP HRI Bordering Streets Facing the Project Area within 0.5 Mile of the Project Area

Primary Number (P-19-)	Historic Address	Time Period	Eligibility Evaluation
	1639 Silver Lake Boulevard		Found ineligible for NRHP, not evaluated for CRHR
	2300 Silver Lake Boulevard	1932	Found ineligible for NRHP, not evaluated for CRHR
175302	1850 Silver Lake Boulevard		Found eligible for NRHP, listed in CRHR
167080	2323 Micheltorena Street	1940	Revaluation needed

California Historical Landmarks

California Historical Landmarks are buildings, structures, sites, or places that have been determined to have statewide historical interest. A search of the California Historical Landmarks list revealed no California Historic Landmarks within 0.5 mile of the project area.

Los Angeles Historic-Cultural Monuments

LAHCMs are sites in Los Angeles that have been designated by the Los Angeles Cultural Heritage Commission as worthy of preservation based on their architectural, historic, and cultural merits. A search of the LAHCMs found 12 monuments within 0.5 mile of the project area (Table 4). These include nine residential houses, one fire station, one mixed-use office/shop/studio/living space complex, and one structure. One LAHCM is located within the project area. LAHCM 422 is Silver Lake and Ivanhoe Reservoirs themselves.

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

LAHCM Number	Historic Name/Description
124	Tierman House
337	Engine Company No. 56
391	Canfield-Moreno Estate
422	Silver Lake and Ivanhoe Reservoirs
640	Richard and Dion Neutra VDL Research House
676	Neutra Office Building
704	John R. Hunt House
837	Droste House
892	Nin-Pole Residence
922	Edward A. “Tink” Adams House
965	Wilson House
967	Lipetz House

Historic Maps and Aerial Photographs

Relevant historic and ethnographic maps and aerial photographs at the SCCIC, online, and in AECOM’s possession were consulted to understand past land use and disturbance and to identify possible locations of archaeological sensitivity within the project area. U.S. Geological Survey (USGS) topographic maps, Baist Fire Insurance Atlases, Sanborn Fire Insurance maps, and historic aerials posted by Nationwide Environmental Title Research, LLC (NETR) were all consulted in this analysis.

Maps prepared by anthropologists or at the direction of local tribes were consulted. These include maps published by A.L. Kroeber and William McCawley (Kroeber 1925; McCawley 1996); *Tongva Villages: Gabrieleno-Fernandeno of the Los Angeles Basin,* prepared by Keepers of Indigenous Ways (Sutimiv-Pa’alat 2010); *Kizh Tribal Territory (Gabrieleno Indian Lands),* prepared by archaeologist Gary Stickel for the Gabrieleno Band of Mission Indians-Kizh Nation (Flaherty 2016); and *Native California: Los Angeles County* (Fernandeno Tataviam Band of Mission Indians 2014). The closest villages shown on these maps to the project area are *Yangna*, located somewhere in the vicinity of today’s Civic Center, and *Maungna*, located in the vicinity of Los Feliz. *Maungna* does not appear on all the maps, but is a well-documented village (McCawley 1996). These maps do not show any tribal villages within or adjacent to the project area of potential effects.

The project area is shown in the 1921 Santa Monica 1:62500 USGS topographic map. The major streets include Armstrong Avenue, Rockford Road, and West Silver Lake Boulevard, which are laid out with Ivanhoe as the name of the neighborhood. The project area and its immediate surroundings are undeveloped with some development of residential homes to the southwest. The Los Angeles River is depicted north of the project site.

In the 1910 Baist Atlas, the project area is not shown. In the 1914 and 1921 Baist Atlases, the property is labeled Tract 903, Lot A (Baist 1914: Plate 42; Baist 1921: Plate 42). In the 1914 Baist Atlas, a structure exists west of Ivanhoe Reservoir. This structure possibly is the caretaker’s house. In the 1921 Baist Atlas, two structures exist west of Silver Lake Reservoir.

A 1948 aerial photograph shows Ivanhoe Reservoir extending farther east along Silver Lake Boulevard in the area known today as the Silver Lake Meadow. The caretaker's house and Landscape Building are shown in the 1948 aerial photograph. The project area is heavily wooded between 1948 and 1972 but is noticeably thinner by 1980. Sometime between 1948 and 1952, the reservoir was reshaped to its present-day appearance (NETR 2018).

Sacred Lands File Search and Native American Consultation

As part of this investigation, an SLF search of the project area and vicinity was requested from the Native American Heritage Commission (NAHC). A letter was prepared and mailed to the NAHC on July 5, 2018. The letter described the project and requested that an SLF check be conducted for the proposed project and that contact information be provided for Native American groups or individuals that may have concerns about cultural resources in the project site. The NAHC responded with a letter dated August 6, 2018. The letter stated that an SLF had been conducted for the project area, and that the results were negative. However, the letter noted "the absence of specific site information in the SLF does not preclude the presence of cultural resources in any project area." The letter also included a list of 16 Native American representatives culturally affiliated with the project area who may have information about the project area. The contact information was provided to LADWP, and all Native American contact and consultation will be conducted by LADWP.

Archaeological Survey

An archaeological field survey of the project area was conducted on August 9, 2018, by AECOM archaeologist Bradley Peacock, M.A. Mr. Peacock meets the Secretary of the Interior's Professional Qualification Standards in Archaeology. The purpose of the survey was to identify and record cultural resources that are at least 45 years old and evaluate any discovered resources for historical significance based on criteria for listing in the CRHR.

The site consists of the LADWP-owned Silver Lake and Ivanhoe Reservoirs and related facilities. Approximately 95% of the project area is currently paved over. The archaeological survey focused on those areas where soil was visible, such as landscaped areas and unpaved areas adjacent to paving; 100% of these areas were inspected. Throughout the surveyed areas, the soil is predominantly densely packed light brown, fine-grained silt. Previous ground disturbance has impacted 100% of the project area due to paving and prior construction.

In the course of the field survey, no archaeological resources meeting the age criterion of 45 years or more were identified.

Built Environment Survey

On August 9, 2018, architectural historian Monica Mello conducted an architectural history survey of the project area. Ms. Mello meets Secretary of the Interior's Professional Qualification Standards in Architectural History and History. During the intensive-level survey, one resource was revisited, the SLRC Historic District. Ms. Mello made notations regarding the historic integrity of the property, and collected information on visible alterations based on background information.

The SLRC Historic District was evaluated and recommended eligible for listing in the CRHR as a Historic District in 2004 (Greenwood and Associates 2004). The SLRC Historic District includes 15 contributing features with a period of significance spanning 1906 to 1953. The SLRC Historic District is significant under CRHR Criteria 1, 2, and 3 significant for its contribution to water infrastructure development history, association with William Mulholland, and for its design and engineering. Changes to the district since its original recording in 2004 were recorded on Department of Parks and Recreation (DPR) 523 forms and are included in Attachment 3. The district appears to meet CRHR eligibility Criteria 1, 2, and 3 and retains the principal character-defining exterior features and aspects of integrity necessary to convey its significance.

Recommendations

The following sections present recommendations for further action regarding archaeological resources, historical resources, and potential tribal cultural resources within the project area. These recommendations are based on information collected from archival research, which examined records kept at the SCCIC, local cultural resource listings, County Assessors' parcel records, historic maps, contemporary archaeological literature, local

prehistoric land use patterns and resource availability, information provided by Native American representatives, and the results of the field survey. All of these investigations and resource documentation serve to inform the recommendations provided for cultural resources in the project area.

ARCHAEOLOGICAL RECOMMENDATIONS

Based on the results of the archival research and field survey, there is low potential that archaeological resources will be encountered during ground-disturbing activities for the proposed project. Ground disturbance required for the proposed project will not exceed 4 feet in depth. Soils at this shallow depth can reasonably be assumed to have been disturbed in the recent past, in particular by utilities excavations and by the construction and demolition of the commercial building, which occupied most of the project footprint until the late 1980s or early 1990s. If archaeological resources are encountered during ground-disturbing activities, work will be temporarily halted in the vicinity of the find and LADWP will contact a qualified archaeologist to evaluate and determine appropriate treatment for the resource in accordance with Public Resources Code (PRC) Section 21083.2(i).

ARCHITECTURAL HISTORY RECOMMENDATIONS

One LAHCM, LAHCM 422, is located within the project site and is Silver Lake and Ivanhoe Reservoirs themselves. The proposed project would not adversely affect LAHCM 422, and its eligibility status would be maintained. The proposed project would not have an obtrusive appearance or form, and the finish materials would be compatible with the historic setting of the project site while also being easily distinguished as modern construction so as not to be interpreted as an original part of the SLRC. The proposed project would not destroy or change any features which are important to defining the character of the SLRC, and the property's historic and contextual setting would be retained.

The SLRC Historic District is a historical resource. The following assesses the potential improvements to determine if a significant impact would occur to the historical resource.

As a historical resource, to minimize any impacts to a level less than significant, this analysis finds that any proposed alterations planned for the SLRC Historic District should be consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties, particularly the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings. Per the National Park Service, rehabilitation is defined as the process of returning a property to a state of utility, through repair or alteration, which makes possible an efficient contemporary use while preserving those portions and features of the property that are significant to its historic, architectural, and cultural values. Rehabilitation assumes that at least some repair or alteration of the historic building will be needed to provide for an efficient contemporary use; however, these repairs and alterations must not damage or destroy materials, features, or finishes that are important in defining the building's historic character. Any proposed alterations shall be designed under the guidance of a Secretary of the Interior qualified architectural historian in order to comply with the Secretary of the Interior's Standards for Rehabilitation. The Standards for Rehabilitation include the following, taking into consideration economic and technical feasibility of the repairs to the historic resource:

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.
2. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.
3. Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.
4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.
5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a property shall be preserved.
6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in

design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.

7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.
8. Significant archaeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.
9. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.
10. New additions and adjacent or related new construction shall be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

In conclusion, as a property that qualifies as a historical resource for purposes of the California Environmental Quality Act that is eligible for listing in the CRHR, any improvements planned for the property should be consistent with the Secretary of the Interior's Standards for Rehabilitation, in order for the project to have a less than significant impact on the SLRC Historic District.

TRIBAL CULTURAL RESOURCE RECOMMENDATIONS

The sensitivity of the project area for tribal cultural resources appears low. The NAHC conducted an SLF search, which was negative. No potential tribal cultural resources were identified during the archival research or the field survey. However, if any Native American cultural material is encountered within the project site, interested Native American parties established through consultation with the lead agency will be notified. LADWP should determine during consultation if the resources constitute tribal cultural resources and solicit any comments the Native American parties may have regarding appropriate treatment and disposition of the resources.

Human remains are not expected to be encountered as soils at the project site have been disturbed in the recent past. Although not expected to occur, in the event that human remains are discovered, such resources would be treated in accordance with all applicable regulations. In accordance with the provisions of the California Health and Safety Code Section 7050.5, in the event that human remains are discovered during project construction, no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains would occur, and the Los Angeles County Coroner would be notified. The coroner would provide recommendations concerning the treatment and disposition of the human remains within two working days. If the remains and/or related resources, such as funerary objects, are determined to be of Native American origin, the coroner would contact the Native American Heritage Commission within 24 hours. In accordance with California Public Resources Code Section 5097.98, the Native American Heritage Commission would immediately notify the person it believes to be most likely descended from the deceased Native American. The most likely descendent would be given access to the site where the remains were discovered and may make recommendations for the treatment and disposition of the remains, and related resources, and the potential for other remains. Work at the discovery site may commence only after consultation with the most likely descendent and treatment of the remains and any associated resources have been concluded. Work may continue on other parts of the project site while consultation and treatment are conducted.

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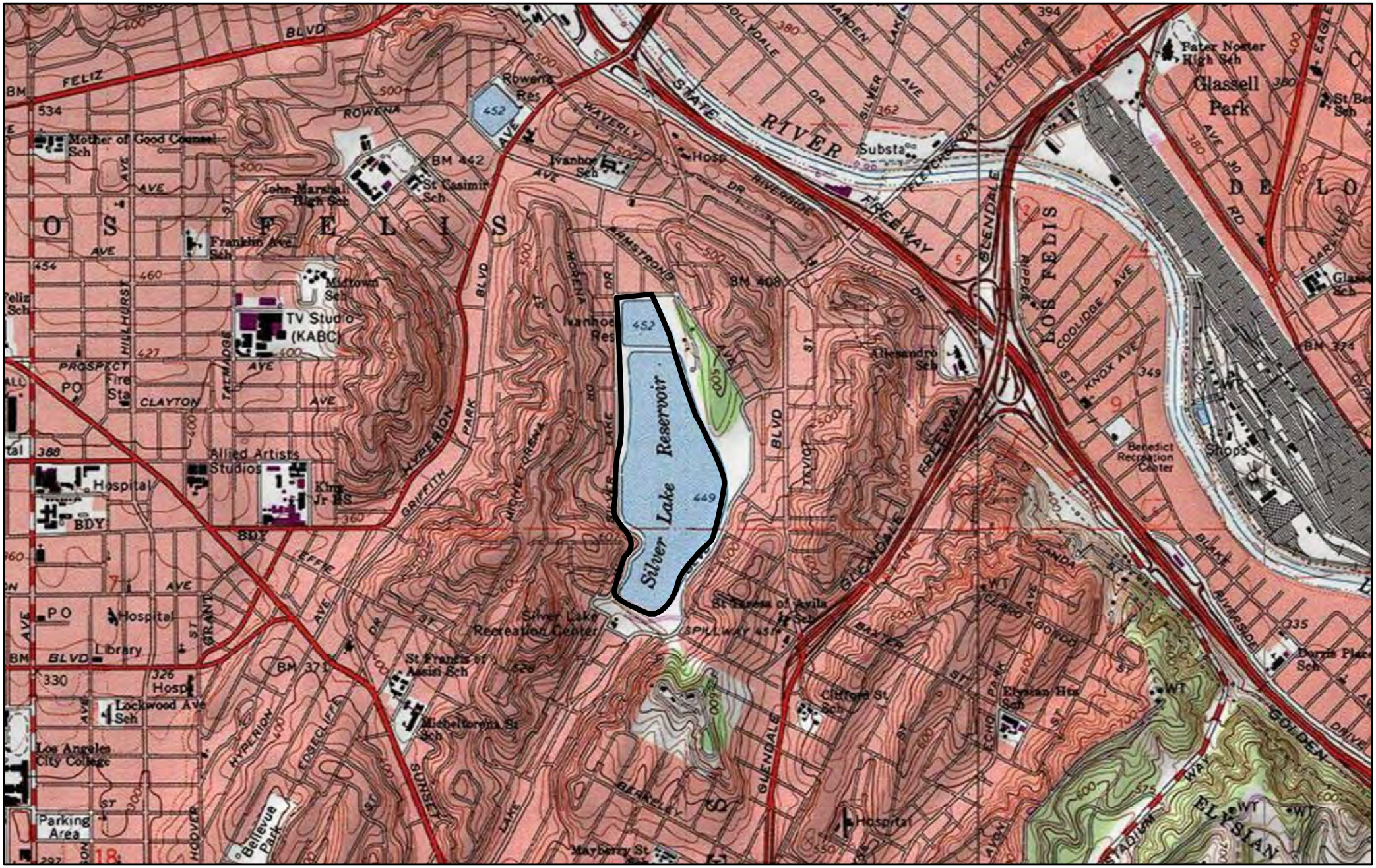
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Attachment 1
Project Area Maps



0 0.25 0.5 Miles

0 0.25 0.5 Kilometers

Scale: 1:24,000
1 in = 2,000 ft

Date: 7/5/2018
Projection: NAD 83 UTM Zone 10N

N

AECOM

Silver Lake
Aeration and Recirculation

NAHC Project Area Map

Legend:

Project Area



Path: C:\GIS Data\Projects\SL Aeration and Recirculation\MXD\NAHC Map - SL_Aeration_Recirculation.mxd

Attachment 2
Sacred Lands File Search

AECOM Inc
300 S. Grand Ave., Suite 200, Los Angeles, CA 90071
T 213.593.7700 www.AECOM.com

July 5, 2018

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95691

Subject: Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System Project

Dear Commissioners:

AECOM was retained by Los Angeles Department of Water and Power (LADWP) to conduct a Phase I cultural resources investigation to identify potential impacts to cultural resources in compliance with the California Environmental Quality Act for the Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System Project. LADWP proposes to control algal growth and associated odors at Silver Lake and Ivanhoe Reservoirs by installing an aeration and recirculation system to properly mix and destratify the water body and ensure full water transfer between both basins. The project will require the installation of pumps and pipelines at the existing Silver Lake and Ivanhoe Reservoirs in the City of Los Angeles.

The project is located in Unsectioned Township 1S, Range 13W and in Section 9 of Township 1S, Range 13W on the Hollywood 1966 USGS topographic 1:24000 maps.

The goal of this letter, in addition to acquainting you with this project, is to request that you check the Sacred Lands File records to identify any previously recorded tribal cultural resources in the project area. In addition, please provide a CEQA Tribal Consultation List, which we will use for contact and LACDPW will use for tribal consultation.

Our Agency contact is as follows:

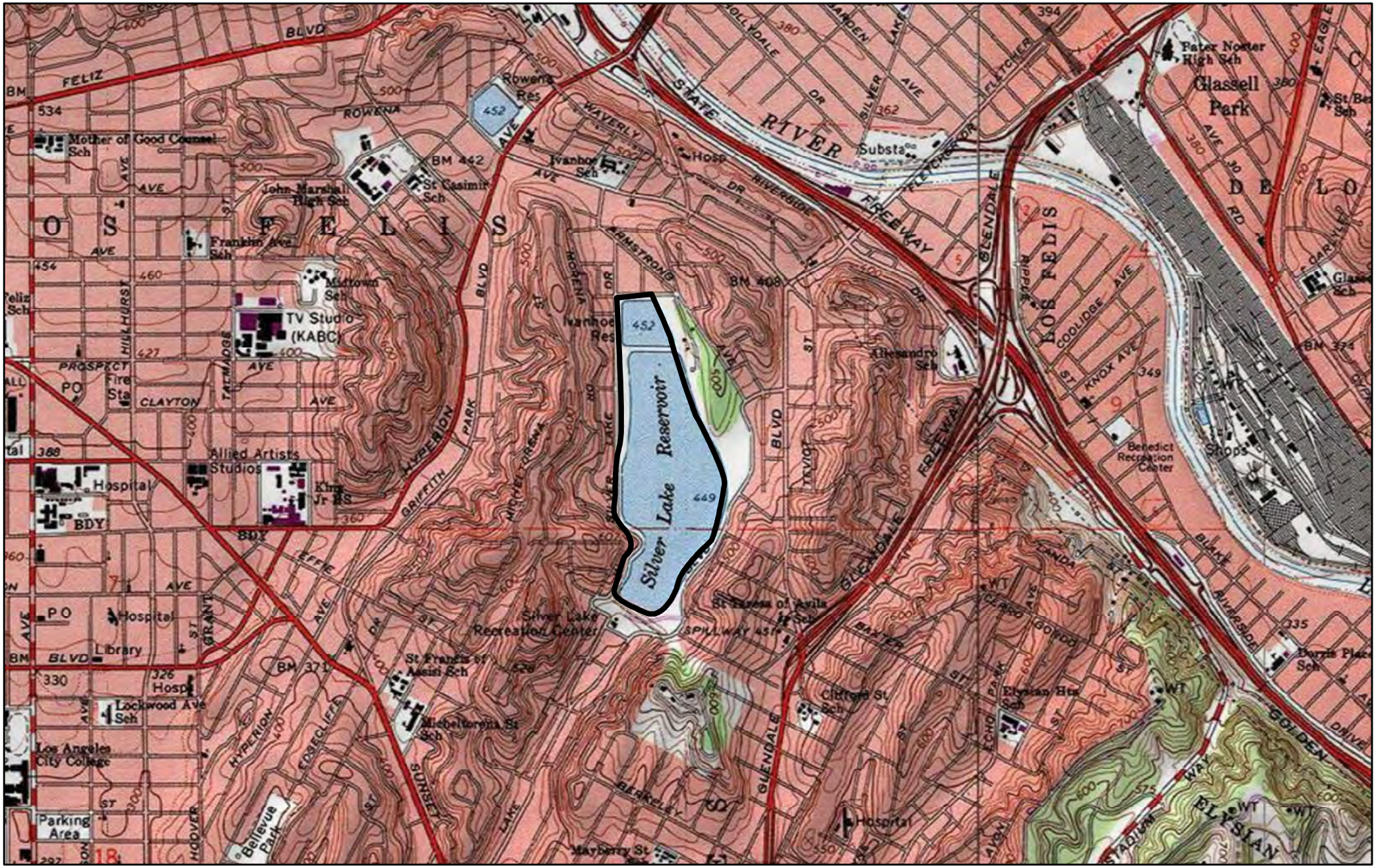
Nadia Parker
LADWP - Environmental Planning and Assessment
111 N. Hope Street, Room 1044
Los Angeles, CA 90012
213-367-1745
Nadia.Parker@ladwp.com

Thank you for your assistance. Please feel free to contact me if you have any questions about this project.

Sincerely,



Marc A. Beherec, Ph.D., RPA
Archaeologist
D 213.593.8481
marc.beherec@aecom.com



0 0.25 0.5 Miles

0 0.25 0.5 Kilometers

Scale: 1:24,000
1 in = 2,000 ft

Date: 7/5/2018
Projection: NAD 83 UTM Zone 10N

N

AECOM

Silver Lake
Aeration and Recirculation

NAHC Project Area Map

Legend:

Project Area



Path: C:\GIS Data\Projects\SL Aeration and Recirculation\MXD\NAHC Map - SL_Aeration_Recirculation.mxd

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

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

August 6, 2018

Marc Beherec

AECOM

Sent by Email: marc.beherec@aecom.com

Re: Silver Lake and Ivanhoe Resevoirs project, Los Angeles County

Dear Mr. Beherec,

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

Enclosed is a list of Native Americans tribes who may have knowledge of cultural resources in the 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 to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these tribes, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at 916-573-1033 or frank.lienert@nahc.ca.gov.

Sincerely,

Frank Lienert
Associate Governmental Program Analyst

Native American Heritage Commission
Native American Contacts
August 6, 2018

Santa Ynez Band of Chumash Indians
Kenneth Kahn. Chairperson
P.O. Box 517 — Chumash
Santa Ynez , CA 93460
kkahn@santaynezchumash.org
(805) 688-7997

(805) 686-9578 Fax

Gabrieleno/Tongva San Gabriel Band of Mission Indians
Anthony Morales. Chairperson
P.O. Box 693 — Gabrielino Tongva
San Gabriel , CA 91778
GTTribalcouncil@aol.com
(626) 483-3564 Cell

(626) 286-1262 Fax

Fernandeno Tataviam Band of Mission Indians
Rudy Ortega Jr.. Tribal President
1019 Second Street. Suite 1 — Fernandeno
San Fernando , CA 91340 — Tataviam
rortega@tataviam-nsn.us
(818) 837-0794

(818) 837-0796 Fax

Gabrielino /Tongva Nation
Sandonne Goad. Chairperson
106 1/2 Judge John Aiso St., #231 — Gabrielino Tongva
Los Angeles , CA 90012
sgoad@gabrielino-tongva.com
(951) 807-0479

Barbareno/Ventureno Band of Mission Indians
Julie Lynn Tumamait-Stenslie. Chair
365 North Poli Ave — Chumash
Ojai , CA 93023
itumamait@hotmail.com
(805) 646-6214

San Manuel Band of Mission Indians
Lee Clauss. Director-CRM Dept.
26569 Community Center Drive — Serrano
Highland , CA 92346
lclauss@sanmanuel-nsn.gov
(909) 864-8933

(909) 864-3370 Fax

Barbareno/Ventureno Band of Mission Indians
Patrick Tumamait
992 El Camino Corto — Chumash
Ojai , CA 93023
(805) 216-1253 Cell

Kern Valley Indian Community
Robert Robinson. Chairperson
P.O. Box 1010 — Tubatulabal
Lake Isabella , CA 93283 — Kawaiisu
brobinson@iwvisp.com
(760) 378-2915 Cell

Kitanemuk & Yowlumne Teion Indians
Delia Dominguez. Chairperson
115 Radio Street — Yowlumne
Bakersfield , CA 93305 — Kitanemuk
deedominguez@juno.com
(626) 339-6785

Gabrielino-Tongva Tribe
Linda Candelaria. Chairperson
No Current Address on File — Gabrielino

This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produced.

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 American Tribes with regard to cultural resources assessments for the proposed Silver Lake and Ivanhoe Resevoirs project, Los Angeles County

Native American Heritage Commission
Native American Contacts
August 6, 2018

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

San Manuel Band of Mission Indians
Lynn Valbuena
26569 Community Center Dr. Serrano
Highland , CA 92346
(909) 864-8933

Gabrieleno Band of Mission Indians - Kizh Nation
Andrew Salas. Chairperson
P.O. Box 393 Gabrielino
Covina , CA 91723
admin@gabrielenoindians.org
(626) 926-4131

Barbareno/Ventureno Band of Mission Indians
Eleanor Arrellanes
P.O. Box 5687 Chumash
Ventura , CA 93005
(805) 701-3246

Barbareno/Ventureno Band of Mission Indians
Raudel Joe Banuelos. Jr.
331 Mira Flores Court Chumash
Camarillo , CA 93012
(805) 427-0015

Gabrielino-Tongva Tribe
Charles Alvarez. Councilmember
23454 Vanowen St. Gabrielino
West Hills , CA 91307
roadkingcharles@aol.com
(310) 403-6048

This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produced.

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This list is only applicable for contacting local Native American Tribes with regard to cultural resources assessments for the proposed Silver Lake and Ivanhoe Resevoirs project, Los Angeles County

Attachment 3
Department of Parks and Recreation (DPR) Forms

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

UPDATE SHEET

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code 3CD

***Resource Name or #:** (Assigned by recorder) Silver Lake Reservoir Complex Historic District

☐ Continuation ☒ Update

P1. Other Identifier: Silver Lake Reservoir, Ivanhoe Reservoir

***P2 e.Other Locational Data:** The SLRC is located in the community of Silver Lake and consists of LADWP-owned Silver Lake and Ivanhoe Reservoirs and related facilities. Silver Lake is five miles northwest of downtown Los Angeles and just east of Griffith Park (APN:5439032900, 5439033901).

***P3a. Description:**

The Silver Lake Reservoir Complex (SLRC) Historic District was found eligible for listing in the CRHR as a Historic District in 2004 (Greenwood and Associates 2004). The SLRC Historic District includes 15 contributing features with a period of significance spanning 1906 to 1953 (**Photographs 1 through 16**). The SLRC Historic District is significant under CRHR Criteria 1, 2, and 3 significant for its contribution to water infrastructure development history, association with William Mulholland, and for its design and engineering. Ultimately, the district appears to meet CRHR eligibility criteria 1, 2, and 3 and retains the principal character-defining exterior features and aspects of integrity necessary to convey its significance.

***P3b. Resource Attributes:** HP2 – Single Family Property; HP4 – Ancillary Building; HP9 – Public Utility Building; HP11 – Engineering Structure; HP22 – Reservoir; HP46 –Walls/gates/fences

P5a. Photograph:



Photograph 1. Silver Lake Reservoir, camera facing north, August 9, 2018.

***P8. Recorded by:** M. Mello, AECOM, 401 West A Street, Suite 1200, San Diego, CA 92101

***P9. Date Recorded:** August 2018

***P10. Survey Type:** Reconnaissance

***P11. Report Citation**: AECOM. Memorandum, "Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System Project." Prepared for the Los Angeles Department of Water Power, 2018.

***P3a. Description (continued)**

Since 2004, minor elements of the district have changed and it appears one contributing element has been demolished. One of the two sheds located within the district has been removed from the property. The Silver Lake Reservoir and Ivanhoe Reservoir appear unchanged since their last recordation. Other alterations observed include: New windows and doors, and alteration to chimney located at the Caretaker's building (2018); new landscape elements and fencing installed (2018); Garage building's exterior cladding replaced (in-kind) (2018); and door replacement at Landscape Building (2018). The table below summarizes the elements of the SLRC Historic District and identifies the status of the various features.

Element	Contributing	Noncontributing
Silver Lake Reservoir	X	
Silver Lake Dam	X	
Silver Lake Outlet Tower		X
Ivanhoe Reservoir	X	
Ivanhoe Dam	X	
Ivanhoe Inlet Tower	X	
Silver Lake South Outlet Chlorination Station	X	
Silver Lake Meter House	X	
Chemical/Chlorine Plant	X	
Caretaker's House	X	
Garage	X	
Bathroom Building	X	
Shed	X	
Landscape Building	X	
Chlorination Station (Ivanhoe)	X	
Laboratory Building		X
Nursery School (temporary buildings)		X
Landscape elements, including stone and concrete retaining walls, perimeter road, trees, shrubs, and other vegetation	X	

***B10. Significance: Theme** Water Infrastructure **Area** Los Angeles
Period of Significance 1906-1953 **Property Type** Engineering Structure
Applicable Criteria CRHR Criterion 1, 2, and 3
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

Greenwood and Associates inventoried and evaluated this property in 2004 for the report titled *Silver Lake Reservoir Complex Storage Replacement Project Cultural Resources Assessment Report*.

Evaluation

Greenwood and Associates concluded that the property was eligible for the California Register of Historical Resources (CRHR) as a historic district, significant for its contribution to water infrastructure development history, association with William Mulholland, and for its design and engineering (Criteria 1, 2, and 3). Despite minor alterations, including the removal of a contributing element (one shed), and alterations to the Caretaker's Building and Garage the overall historic integrity of the SLRC Historic District remains intact. The property retains integrity of location, design, setting, materials, workmanship, feeling, and association. After review of the previous recordation and current field check and research, the present evaluation concludes that the property appears to meet the criteria for listing in the CRHR and the property is considered an historical resource for the purpose of the California Environmental Quality Act (CEQA). The property has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code. The boundary for the historic district is its legal parcels (APN:5439032900, 5439033901).

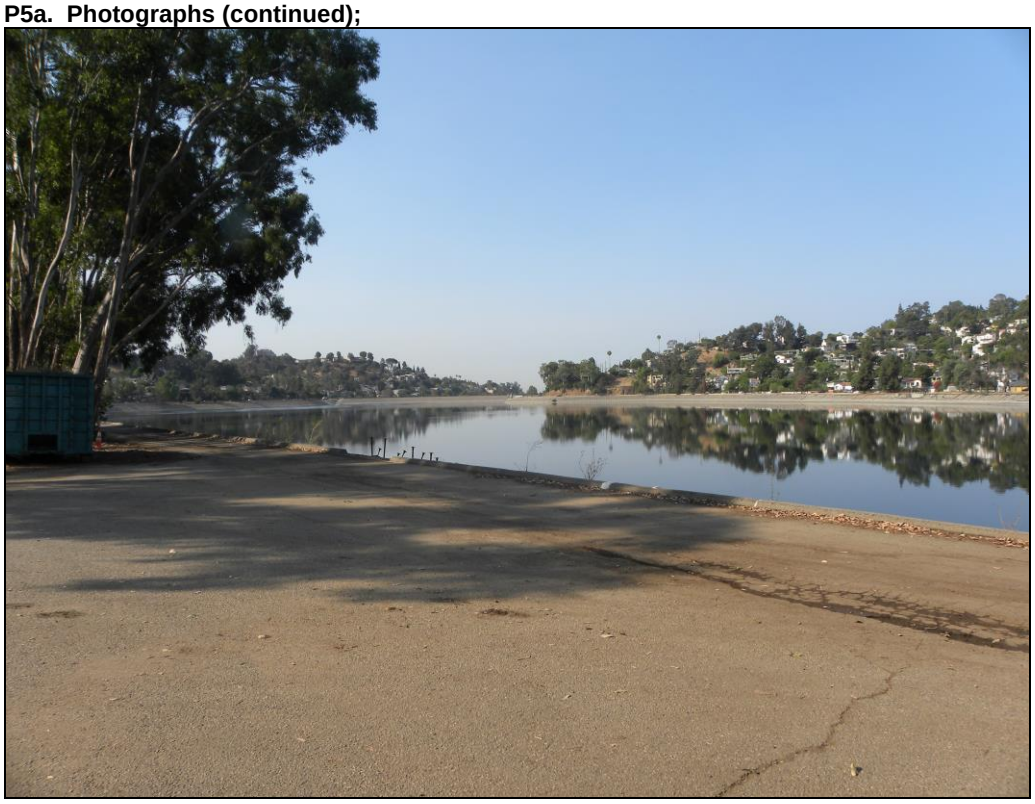
***B14. Evaluator:** M. Mello, AECOM ***Date of Evaluation:** August 2018

***B12. References:**

AECOM
2018 Memorandum, "Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System Project." Prepared for the Los Angeles Department of Water Power, 2018.

Greenwood and Associates
2004 *Silver Lake Reservoir Complex Storage Replacement Project Cultural Resources Assessment Report*. Document prepared by Greenwood and Associates for LADWP.

P5a. Photographs (continued);



Photograph 2. Silver Lake Reservoir, camera facing southwest, August 9, 2018



Photograph 3. Silver Lake Dam, camera facing south, August 9, 2018



Photograph 4. Silver Lake Outlet Tower, camera facing southeast, August 9, 2018



Photograph 5. Ivanhoe Reservoir, camera facing north, August 9, 2018



Photograph 6. Ivanhoe Dam, camera facing west, August 9, 2018



Photograph 7. Chlorination Station (Ivanhoe), camera facing northeast, August 9, 2018



Photograph 8. Caretaker's House, camera facing north, August 9, 2018



Photograph 9. Caretaker's House, camera facing west, August 9, 2018



Photograph 10. New Landscaping near Caretaker's House, camera facing south, August 9, 2018



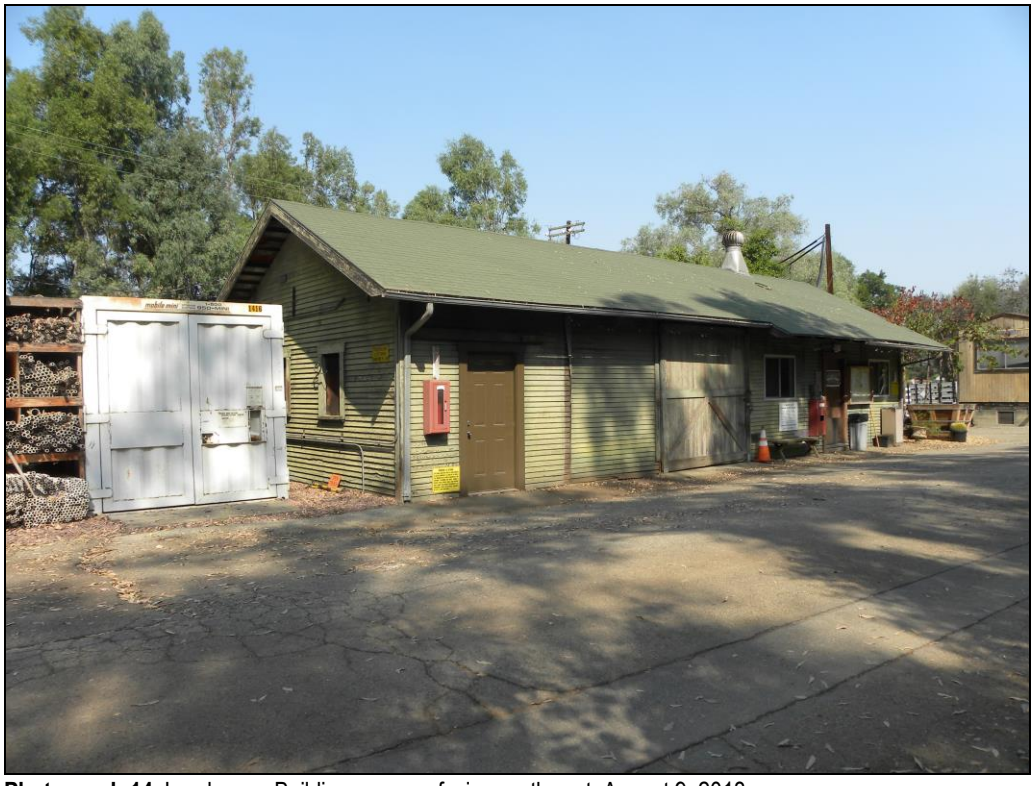
Photograph 11. Garage, camera facing west, August 9, 2018



Photograph 12. Bathroom Building, note shed located behind bathroom building, camera facing southwest, August 9, 2018



Photograph 13. Shed (left) and Garage (right), camera facing north, August 9, 2018



Photograph 14. Landscape Building, camera facing northwest, August 9, 2018



Photograph 15. Laboratory Building, camera facing north, August 9, 2018



Photograph 16. Contributing landscape elements, camera facing north, August 9, 2018

APPENDIX D
Energy Resources Assessment

Technical Memorandum

TO: Cristina Lowery
AECOM

FROM: Terry A. Hayes Associates Inc.

DATE: March 18, 2020

RE: Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System Project – Energy Resources Assessment

Introduction

Terry A. Hayes Associates Inc. (TAHA) has completed a Energy Resources Assessment for the Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System Project (proposed project) in accordance with the provisions of the California Environmental Quality Act (CEQA) Statutes and Guidelines. The Energy Resources Assessment is organized as follows:

- Project Description
- Energy Topical Information
- Regulatory Framework
- Existing Setting
- Significance Thresholds
- Methodology
- Impact Assessment
- References

Project Description

The Los Angeles Department of Water and Power (LADWP) proposes to implement the Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System Project (proposed project) within its Silver Lake Reservoir Complex (SLRC), which comprises the Silver Lake and Ivanhoe Reservoirs (the reservoirs).

The proposed project would be located in the Silver Lake community of the City of Los Angeles, approximately five miles north of downtown Los Angeles. **Figure 1** shows the regional vicinity of the project site. **Figure 2** shows the project location. The reservoirs require an aeration and recirculation system to ensure that reasonable water quality parameters are met for visual aesthetics and controlling odors. The proposed project would include the installation of a bubble plume aeration system and a recirculation pipe system to ensure oxygenation and destratification of the reservoirs. Destratification allows for the mixing of the reservoir water to allow for oxygen levels to be maintained throughout the reservoir. **Figure 3** shows the aeration and recirculation systems proposed to be installed in the reservoirs. The proposed project would be implemented in two phases as described below.

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Source: Esri Maps & Data, 2019.

Figure 1
Regional Map



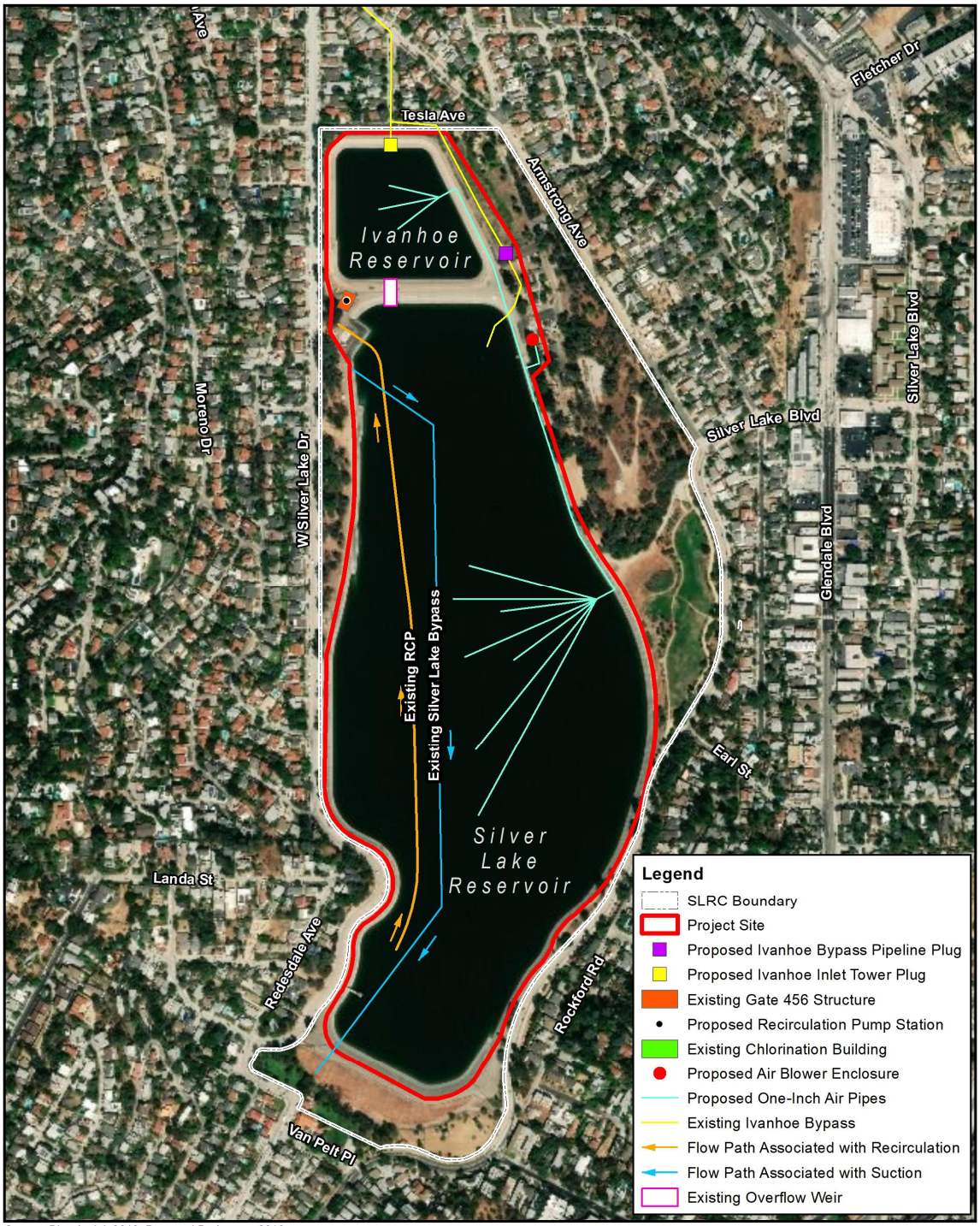
Source: Esri, 2020; Prepared By AECOM, 2020.

0 250 500 1,000 Feet

SLRC Boundary

Project Site

Figure 2
Project Location Map



Source: Bing Aerial, 2019; Prepared By Aecom, 2019.

0 250 500 1,000 Feet

Figure 3
Proposed Project
Aeration and Recirculation System

Phase 1 would include installation of an aeration system consisting of air blowers, air piping to each of the reservoirs, bubble plume system diffusers in each of the reservoirs, and aftercoolers. Two air blowers would be installed for each reservoir, including one in continuous operation and one to serve as a backup. The air blowers would be housed in an enclosure with ventilation and sound insulation. The air blower package enclosure would be located inside an existing chlorination building in the northeast portion of the SLRC between the two reservoirs.

Phase 2 would include the installation of a recirculation system consisting of a recirculation pump station, recirculation piping, and inflow from Ivanhoe Reservoir to Silver Lake Reservoir via the existing overflow weir. Additionally, two concrete plugs and approximately 400 feet of new recirculation piping would be installed within Ivanhoe Reservoir. The concrete plugs would be installed at the existing Ivanhoe Bypass and Ivanhoe Inlet Tower. The recirculation pump equipment would be installed at the existing Gate 456 structure, which is a fenced gate structure on the northwest corner of Silver Lake Reservoir that was historically used for water bypass when both Silver Lake and Ivanhoe Reservoirs were connected to the potable water system. Two submersible recirculation pumps would be installed along the depths of both Silver Lake and Ivanhoe Reservoirs and within the Gate 456 structure, with one pump on duty and the other on standby during normal operations. Both pumps would have the flexibility to operate simultaneously under special conditions. Suction intake would be located at the south end of the Silver Lake Reservoir along the existing Silver Lake Bypass pipeline and discharge would occur at the north end of Ivanhoe Reservoir. The recirculation piping would be connected to the recirculation pump to transfer water from Silver Lake Reservoir to Ivanhoe Reservoir over a partition wall within the Gate 456 structure. Inflow from Ivanhoe Reservoir to Silver Lake Reservoir would occur via the existing weir over the Silver Lake North Dam between the reservoirs.

Construction Activities and Schedule

Construction of Phase 1 is anticipated to begin in November 2020 and take approximately 13 months to complete, concluding in December 2021. Construction of Phase 2 is anticipated to begin at the end of Phase 1 and take approximately 16 months to complete. Construction activities would occur Mondays through Friday from 7:00 a.m. to 3:00 p.m. Construction vehicle access would be available via the existing driveway at the northeastern corner of the SLRC near the intersection of Tesla Avenue and Armstrong Avenue. It is anticipated that haul trucks and construction workers would travel south to the project site from Sun Valley using Interstate 5 (I-5), then travel south on Riverside Drive to Glendale Boulevard, and then west on Lakewood Avenue to Armstrong Avenue. All construction activities would occur completely within the boundaries of the SLRC. Construction staging and laydown areas would also occur within the SLRC.

Phase 1 – Reservoir Aeration. Construction activities at each reservoir would consist of construction of the aeration header at the existing chlorination building, installation of the pre-assembled air blower enclosures for the aeration system, installation of the pipeline connections, and assembly of the diffusers. As previously discussed, the air blowers for the aeration system would be housed in a sound-insulated enclosure. Site preparation for the enclosure would include demolition of existing concrete slabs, installation of 40 polyvinyl chloride (PVC) conduits, and construction and casting of concrete and equipment pads. The concrete and equipment pads would require the site to be cleared, excavated up to three feet, and graded. The enclosure units would be installed within the existing chlorination building behind its concrete walls.

Following construction of the air blower enclosures, air pipes would be installed from the air blowers to diffuser systems at each reservoir. The pipes would be installed underground utilizing trenching and backfilling methods, with the exception of self-weighted lines that would extend within the reservoir.

Approximately 1,021 linear feet of pipeline would be required for Ivanhoe Reservoir and approximately 1,076 linear feet of pipeline would be required for Silver Lake Reservoir. As previously discussed, the diffusers would consist of a diffuser and a manifold, which would be strategically placed across the reservoirs for optimal aeration. After installation of the pipelines and diffuser systems, the existing control panel would be moved from the existing chlorination building to the newly constructed enclosures. The air blowers and associated piping and supports and ventilation system would be installed within the enclosure. Aftercoolers would be located outside of the enclosures, and a sunshade and would be constructed to protect the equipment. It is estimated that a total of 120 megawatt-hours (MWh) of energy would be used by the recirculation network during Phase 1.

It is anticipated that approximately 1,102 cubic yards of materials would be imported to the project site, including 684 cubic yards of crushed aggregate base, 78 cubic yards of asphalt, 98 cubic yards of concrete, and 233 cubic yards of slurry. Additionally, approximately 1,045 cubic yards of materials would be excavated and exported from the project site, including 982 cubic yards of soil, 35 cubic yards of asphalt, and 28 cubic yards of concrete. Materials required for construction would be stored on site, with the exception of asphalt and concrete. Construction of Phase 1 of the proposed project would require a total of approximately 277 truck trips consisting of 101 trips for imported materials, 88 trips for exported materials, and 88 additional haul truck trips.

The estimated daily average of on-site workers would consist of a peak of 29 workers per day. Construction worker vehicle trips would account for approximately 277 roundtrips for the duration of 13 months, with an average of approximately 22 roundtrips per month.

Construction activities for Phase 2 of the proposed project would require approximately 10 pieces of equipment, including an asphalt paver, backhoe loader, barge, butt fusion machine, crane, front end loader, fork lift, generator, roller, and vibrating plate as well as maintenance and dump trucks. All equipment would be stored on site. The estimated daily peak number of equipment on-site would be three pieces with an average of two pieces. The estimated daily peak number of trucks on-site would be six trucks with a daily average of three trucks on-site for the entire duration of Phase 2.

Phase 2 - Recirculation System. Construction activities for Phase 2 include installation of pipeline in Ivanhoe Reservoir, installation of concrete plugs at the existing Ivanhoe Bypass and Ivanhoe Inlet tower, demolition of the existing equipment in the Gate 456 structure, installation of a suction intake on the existing Silver Lake bypass pipeline, and construction of the recirculation pump station within the Gate 456 structure, including a partition wall. Demolition would involve removal of existing electrical and mechanical equipment and an existing concrete slab within the Gate 456 structure.

Prior to installation of the concrete plugs, the water from Ivanhoe Reservoir would be pumped into Silver Lake Reservoir. Following draining of the water, 400 linear feet of pipeline would be placed and casted with concrete within Ivanhoe Reservoir to recirculate water within this reservoir. The concrete plugs would be formed on-site, placed in the Ivanhoe Bypass and then the Ivanhoe Tower Inlet, and finished with additional concrete.

The recirculation pump station equipment would be located within the Gate 456 structure adjacent to the equipment enclosures associated with the Silver Lake Regulating Station. Construction activities for the recirculation pump station would include excavation up to four feet for a 6-foot by 3-foot duct bank, construction of 40 PVC conduits, casting equipment pads and concrete slabs for a 50-foot by 60-foot sized enclosure, installation of the control system, and connecting the control panel to the equipment and pipes. The pumps would be placed below-grade within a hydraulic structure, which would be shielded from view at the

property line. It is estimated that 97 MWh of energy per year would be used by the recirculation network during Phase 2. This would result in total annual energy us of 217 MWh.

Approximately 100 feet of piping would be installed within the Gate 456 structure, which would pump water from Silver Lake Reservoir over a partition wall to Ivanhoe Reservoir. Inflow from Ivanhoe Reservoir to Silver Lake Reservoir would occur via the existing weir over the Silver Lake North Dam between the reservoirs. Following installation of the piping, Ivanhoe Reservoir would be refilled via gravity through the existing Gate 456 structure.

It is anticipated that approximately 167 cubic yards of materials would be imported to the project site consisting of 21 cubic yards of crushed aggregate base, 5 cubic yards of asphalt, 141 cubic yards of concrete, and 8 cubic yards of slurry. Additionally, approximately 64 cubic yards of materials would be exported from the project site consisting of 35 cubic yards of soil, 2 cubic yards of asphalt, and 27 cubic yards of concrete. Materials required for construction, except for asphalt and concrete, would be stored on site. Construction of Phase 2 of the proposed project would require a total of approximately 81 truck trips consisting of 45 trips for imported materials, 8 trips for exported materials, and 28 additional haul truck trips. The estimated daily peak number of on-site workers would be 22 workers. Construction worker vehicle trips would account for approximately 278 roundtrips for the duration of 16 months, with an average of approximately 18 roundtrips per month.

Construction activities for Phase 2 of the proposed project would require approximately 10 pieces of equipment, including an asphalt paver, backhoe loader, barge, butt fusion machine, crane, front end loader, fork lift, generator, roller, and vibrating plate as well as maintenance and dump trucks. All equipment would be stored on site. The estimated daily peak number of equipment on site would be 3 pieces with an average of 2 pieces. The estimated daily peak number of trucks on site would be 6 trucks with a daily average of 3 trucks on site for the entire duration of Phase 2.

Energy Topical Information

Transportation Fuels

In California approximately 15.1 billion gallons of gasoline and 4.2 gallons of diesel, including off-road diesel were sold and consumed in 2015. Approximately 97 percent of all gasoline consumed in California is utilized by light-duty cars, pickup trucks, and sport utility vehicles. Nearly all heavy-duty trucks, delivery vehicles, buses, trains, ships, boats and barges, farm, construction, and heavy-duty military vehicles have diesel engines.[1]

Electricity Supply

Electricity in the Project area is provided by the Los Angeles Department of Water and Power (LADWP). LADWP's power system supplies more than 26 million MWh of electricity a year for the City of Los Angeles' 1.5 million residential and business customers as well as over 5,000 customers in Owens Valley. Typical residential energy use per customer is approximately 500 kilowatt-hours (kWh) per month. Business and industry consume approximately 70 percent of the electricity in Los Angeles. LADWP has a generation capacity of 7,880 megawatts from a mix of energy sources. Approximately 29 percent of electricity is generated

[1]California Energy Commission, *Energy Almanac*, https://www.energy.ca.gov/data-reports/energy-almanac, accessed February 10, 2020.

from renewable energy, 34 percent from natural gas, 9 percent from nuclear, 3 percent from hydroelectric, 19 percent from coal, and 6 percent from purchased power.[2]

Natural Gas

Natural gas is provided and distributed to residents and businesses in the City of Los Angeles by the Southern California Gas Company (SoCalGas). According to the 2018 California Gas Report, SoCalGas is expected to provide an average of 2,519,000,000 thousand British Thermal Unit per day by 2022. SoCalGas projects total gas demand to decline at an annual rate of 0.74 percent from 2018 to 2035. The decline in throughput demand is due to modest economic growth, California Public Utilities Commission mandates energy efficiency standards and programs, tighter standards created by revised Title 24 Codes and Standards, renewable electricity goals, the decline in commercial and industrial demand, and conservation savings linked to Advanced Metering Infrastructure.[3]

Regulatory Framework

The following provides a brief summary of energy regulations and policies. This is a not an exhaustive list of all regulations and policies.

Federal

On August 8, 2005, President George W. Bush signed the Energy Policy Act of 2005 into law. This comprehensive energy legislation contains several electricity related provisions that aim to:

- Help ensure that consumers receive electricity over a dependable, modern infrastructure;
- Remove outdated obstacles to investment in electricity transmission lines;
- Make electric reliability standards mandatory instead of optional; and
- Give federal officials the authority to site new power lines in Department of Energy designated national corridors in certain circumstances.

State

CEQA Guidelines Appendix F provides a goal of conserving energy in the state of California. The appendix indicates the following methods to achieve this goal: (1) decreasing overall per capita energy consumption, (2) decreasing reliance on natural gas and oil, and (3) increasing reliance on renewable energy sources.

The California Renewables Portfolio Standard (RPS) Program, which was established in 2002 under Senate Bill (SB) 1078, accelerated in 2006 under SB 107, expanded in 2011 under SB 2 and further expanded in 2015 under SB 350, California's RPS is one of the most ambitious renewable energy standards in the country. The RPS program requires investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 33 percent of total procurement by 2020. On September 12, 2002, then-Governor Gray Davis signed SB 1078. SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of

[2]Los Angeles Department of Water and Power, *2017 Power Strategic Long-Term Resource Plan*, December 31, 2017.
[3]California Gas and Electric Utilities, *2018 California Gas Report*, 2018.

2006) changed the target date to 2010. In November 2008, then-Governor Arnold Schwarzenegger signed Executive Order S-14-08, which expands the state's RPS to 33 percent renewable power by 2020. In September 2009, Governor Schwarzenegger continued California's commitment to the RPS by signing Executive Order S-21-09, which directs the California Air Resources Board (CARB) under its AB 32 authority to enact regulations to help the state meet its RPS goal of 33 percent renewable energy by 2020. The 33 percent by 2020 goal was codified in April 2011 with SB X1-2, which was signed by Governor Edmund G. Brown, Jr. This RPS preempts the CARB 33 percent Renewable Electricity Standard and applies to all electricity retailers in the state, including publicly owned utilities, investor-owned utilities, electricity service providers, and community choice aggregators. These entities must adopt the new RPS goals of 20 percent of retail sales from renewables by the end of 2013 and 25 percent by the end of 2016, with the 33 percent requirement being met by the end of 2020.

The Clean Energy and Pollution Reduction Act of 2015, SB 350 (Chapter 547, Statutes of 2015) was approved by Governor Edmund G. Brown, Jr. on October 7, 2015. SB 350 does the following: (1) increases the standards of the RPS program by requiring that the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources be increased to 50 percent by December 31, 2030; (2) requires the State Energy Resources Conservation and Development Commission to establish annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas final end uses of retail customers by January 1, 2030; (3) provides for the evolution of the Independent System Operator into a regional organization; and (4) requires the state to reimburse local agencies and school districts for certain costs mandated by the state through procedures established by statutory provisions. Among other objectives, the legislature intends to double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation (SB 350, Clean Energy and Pollution Reduction Act 2015).

Title 24 of the California Code of Regulations comprises the State Building Standards Code. Part 6 of Title 24 is the California Energy Code that includes the building energy efficiency standards. The standards include provisions applicable to all buildings, residential and non-residential, and describe the requirements for documentation to certify that building designs meets the standards.

Executive Order S-06-06 establishes targets for the use and production of bio-fuels and bio-power and directs state agencies to work together to advance biomass programs in California while providing environmental protection and mitigation. The executive order establishes the following target to increase the production and use of bio-energy, including ethanol and biodiesel fuels made from renewable resources: produce a minimum of 20 percent of its bio-fuels within California by 2010, 40 percent by 2020, and 75 percent by 2050.

On April 29, 2015, Governor Edmund G. Brown Jr. signed Executive Order B-30-15, establishing a new statewide goal to reduce greenhouse gas emissions 40 percent below 1990 levels by 2030. Senate Bill 1389 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.

Local

On May 15, 2007, Los Angeles Mayor Antonio Villaraigosa released the "GREEN LA – An Action Plan to Lead the Nation in Fighting Global Warming" (GREEN LA Plan) that has an overall goal of reducing the City of Los Angeles' greenhouse gas (GHG) emissions by 35 percent below 1990 levels by 2030. This goal exceeds the targets set by both California and the Kyoto Protocol, and is the greatest reduction target of any large United States city. The cornerstone of the GREEN LA Plan is increasing the City's use of renewable energy to 35 percent by 2020.

On April 8, 2015, Mayor Eric Garcetti released the pLAn, a roadmap to achieve back to basics short-term results while setting the path to strengthen and transform the City. The pLAn is made up of short-term (by 2017) and longer-term (by 2025 and 2035) targets in 14 categories to advance the City's environment, economy and equity. The pLAn provides strategies to create a more sustainable and livable city by: improving land use planning to promote neighborhood quality of life; conserving energy and water; mitigating and adapting to climate change; building transit options for an accessible future; promoting affordability and environmental justice; and restoring and reinventing the Los Angeles River. In 2019, Mayor Eric Garcetti released an update to the pLAn which accelerates previous sustainability targets and looks even further out to 2050.

The 2017 LADWP Power Strategic Long-Term Resource Plan (SLTRP) is a 20-year roadmap that guides the LADWP power system in its efforts to supply reliable electricity in an environmentally responsible and cost-effective manner. One of the main focuses of the SLTRP is to reduce greenhouse gas emissions, while maintaining cost competitive rates and reliable electric service. The SLTRP examines multiple strategies to reduce GHG emissions, including early coal replacement, accelerated renewable portfolio standard, energy efficiency, local solar, energy storage, and transportation electrification. As LADWP starts the process to investigate, study, and determine the investments needed for a 100 percent clean energy portfolio, the 2017 SLTRP provides a path towards this goal with a combination of GHG reduction strategies, including early coal replacement two years ahead of schedule by 2025, accelerating renewable portfolio standard to 50 percent by 2025, 55 percent by 2030, and 65 percent by 2036, doubling of energy efficiency from 2017 through 2027, repowering coastal in-basin generating units with new, highly efficient potential clean energy projects by 2029 to provide grid reliability and critical ramping capability, accelerating electric transportation to absorb GHG emissions from the transportation sector, and investing in the Power System Reliability Program to maintain a robust and reliable Power System.[4]

Existing Setting

California contains abundant sources of nonrenewable and renewable energy. Nonrenewable resources include large crude oil and natural gas deposits that are located within six geological basins in the Central Valley and along the coast. Much of these reserves are concentrated in the southern San Joaquin Basin. Regarding renewable resources, the State leads the nation in net electricity generation from solar, geothermal, and biomass. California has considerable solar potential, especially in the southeastern deserts and several of the world's largest solar thermal plants are located in California's Mojave Desert. Although California's wind power potential is widespread, especially along the eastern and southern mountain ranges, much of the State is excluded from development of this resource because it is in wilderness areas, parks, or urban areas. The transportation sector is responsible for the most energy consumption of any sector within the State. More motor

[4]Los Angeles Department of Water and Power, *2017 Power Strategic Long-Term Resource Plan*, December 31, 2017.

vehicles are registered in California than in any other state, and commute times in California rank among some of the longest in the country.

The SLRC includes the Silver Lake and Ivanhoe Reservoirs, dams, buildings, water and stormwater infrastructure, interior roads, and public recreational facilities. The proposed facilities would be installed within the reservoirs and the area adjacent to the edges of the reservoir within the SLRC in the areas that currently contain other LADWP facilities. The area surrounding the SLRC is characterized by low-rise single and multi-family residential structures with various commercial uses located along busier roadways in the neighborhood. No electricity or natural gas facilities have been identified that may be affected by the project.

Significance Thresholds

This Assessment was undertaken to determine whether construction or operation of the proposed project would have the potential to result in significant environmental impacts related to Energy Resources in the context of the Appendix G Environmental Checklist criteria of the CEQA Statute and Guidelines. Implementation of the proposed project may result in a significant environmental impact related to Energy Resources if the proposed project would:

a) Result in potentially significant environment impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation; and/or
b) Conflict with or obstruct a State or local plan for renewable energy or energy efficiency.

Methodology

Appendix F of the CEQA Guidelines states that the goal of conserving energy implies the wise and efficient use of energy, to be achieved by decreasing overall per capita energy consumption; decreasing reliance on natural gas and oil; and increasing reliance on renewable energy resources. To assure energy implications are considered in project decisions, CEQA requires that environmental impact reports include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy.

The air quality analysis prepared for the proposed project, included in the appendix for the environmental documentation, includes a quantification of construction-related carbon dioxide (CO_2) emissions using the California Emissions Estimator Model. These emissions were used to estimate construction energy from CO_2 emission factors derived for the CARB GHG emissions inventory. The 2018 Climate Registry indicates that for gasoline fuel, approximately 8.78 kilograms of CO_2 are generated per gallon combusted, and for diesel fuel, approximately 10.21 kilograms of CO_2 are generated per gallon combusted. The fuel consumption was estimated from the equipment and vehicles that would be employed in construction activities. Diesel engines are installed in heavy-duty off-road construction equipment and on-road haul trucks. Gasoline engines are typically found in passenger vehicles that would be used for construction worker daily commutes.

Impact Assessment

a) Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation? (Less-than-Significant Impact)

The following analysis discusses short-term (construction) and long-term (operational) use of electricity, natural gas, and petroleum.

Electricity

Construction. Construction of the proposed project would require electricity for lighting, construction trailers, and operation of electrically powered hands tools. Electricity to the site would be provided by LADWP and it is likely that most electrically powered equipment would connect to the grid. Consumption of electricity for construction would be minimal and would cease after completion of the proposed project. Electricity use would be minimized to the extent feasible through incorporation of sustainability features and best management practices. Therefore, construction of the proposed project would result in a less than significant impact related to wasteful, inefficient, or unnecessary consumption of electricity.

Operation. Electricity would be needed to continuously operate the air blower units. The estimated energy consumption of the recirculation network is 120 MWh for Phase 1 and 97 MWh annually for Phase 2, totaling 217 MWh. The aeration and recirculation system would ensure that water quality parameters are met for visual aesthetics and controlling odors. The proposed project would allow the reservoirs to revert to a more natural state, maintained as view lakes, and to remain consistent with the community values that were set forth in the Silver Lake Master Plan. Using electricity to achieve the objectives would not be wasteful, inefficient, or unnecessary. Therefore, operation of the proposed project would result in a less than significant impact related to the consumption of electricity.

Natural Gas

Construction. Construction activities typically do not require the consumption of natural gas to power equipment or heavy machinery. Natural gas that would be consumed during construction would be negligible and would not result in a significant drain on natural gas resources. Therefore, construction of the proposed project would result in a less than significant impact related to wasteful, inefficient, or unnecessary consumption of natural gas.

Operation. The proposed project would not use natural gas. Therefore, operation of the proposed project would not result in a significant impact related to wasteful, inefficient, or unnecessary consumption of natural gas.

Petroleum

Construction. Petroleum would be consumed during the demolition, excavation, and construction phases of the proposed project by heavy-duty equipment, which is usually diesel powered. Construction of the proposed project would result in an increased consumption of gasoline and diesel fuels associated with haul trucks, deliveries, and worker commute trips. **Table 1** shows that a one-time expenditure of approximately 3,541 gallons of diesel fuel and 896 gallons of gasoline would be needed to construct the proposed project.

TABLE 1: CONSTRUCTION PETROLEUM DEMAND			
Source	**CO_2 (Metric Tons)**	**kg/CO_2/Gallon**	**Gallons**
DIESEL			
Equipment – Phase 1	247	10.21	2,522
Equipment – Phase 2	97	10.21	990
Trucks – Phase 1	3.4	10.21	35
Trucks – Phase 2	0.4	10.21	4.1
		Total Diesel Consumption	3,551
GASOLINE			
Worker Vehicles – Phase 1	79	8.78	694
Worker Vehicles – Phase 2	23	8.78	202
		Total Gasoline Consumption	896
SOURCE: The Climate Registry, 2018; TAHA, 2020.			

The proposed project would use best practices to eliminate the potential for the wasteful consumption of petroleum. Exported materials (e.g., demolition debris and soil hauling) would be disposed of at the closest facility that accepts such materials, and the proposed project would be required to comply with CARB's Airborne Toxics Control Measure, which restricts heavy-duty diesel vehicle idling time to five minutes. Therefore, because petroleum use would be minimized to the extent feasible and represents a relatively small amount of fuel consumption, construction of the proposed project would result in a less than significant impact related to wasteful, inefficient, or unnecessary consumption of petroleum.

Operation. Petroleum consumption during operation of the proposed project would be related to vehicle trips for periodic maintenance. Maintenance would require one daily trip up to three times per week. This minimal vehicle use would have a negligible effect on petroleum supplies. Therefore, operation of the proposed project would not result in a significant impact related to wasteful, inefficient, or unnecessary consumption of petroleum.

Mitigation Measure

No mitigation measures are required.

b) Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency? (Less-than-Significant Impact)

There is no potential for the water aeration and recirculation system to conflict with renewable energy or energy efficiency plans. A review of plans and policies described in the Regulatory Framework did not identify plans or policies relevant to an aeration and recirculation systems project. Electricity will be provided from the LADWP system, and LADWP has a long-term plan to provide 100 percent of the City's electrical power through renewable resources by 2045. The electricity needed to operate the proposed project, 120 MWh for Phase 1 and 97 MWh annually for Phase 2, will not interfere with this long-term plan for renewable energy. Regarding energy efficiency, the proposed project will comply with Title 24, Part 6, of the California Code of Regulations and construction activities would use best practices to eliminate the potential for the wasteful

consumption of energy (e.g., compliance with CARB's Airborne Toxics Control Measure, which restricts heavy-duty diesel vehicle idling time to five minutes). Therefore, the proposed project would result in a less than significant impact related to energy plans and energy efficiency.

Mitigation Measures

No mitigation measures are required.

References

42 United States Code, *Section 13201 et seq. Energy Policy Act*, 2005.

California Code of Regulations, *Title 24 Building Energy Efficiency Standards*, 2019.

California Energy Commission, *Energy Almanac*, available at *https://www.energy.ca.gov/data-reports/energy-almanac*, accessed February 10, 2020.

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APPENDIX E
Greenhouse Gas Emissions Assessment

Technical Memorandum

TO: Cristina Lowery
AECOM

FROM: Terry A. Hayes Associates Inc.

DATE: March 18, 2020

RE: Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System Project – Greenhouse Gas (GHG) Emissions Assessment

Introduction

Terry A. Hayes Associates Inc. (TAHA) has completed a GHG Emissions Assessment for the Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System Project (proposed project) in accordance with the provisions of the California Environmental Quality Act (CEQA) Statutes and Guidelines. The Air Quality Assessment is organized as follows:

- Project Description
- GHG Topical Information
- Regulatory Framework
- Existing Setting
- Significance Thresholds
- Methodology
- Impact Assessment
- References

Project Description

The Los Angeles Department of Water and Power (LADWP) proposes to implement the Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System Project (proposed project) within its Silver Lake Reservoir Complex (SLRC), which comprises the Silver Lake and Ivanhoe Reservoirs (the reservoirs).

The proposed project would be located in the Silver Lake community of the City of Los Angeles, approximately five miles north of downtown Los Angeles. **Figure 1** shows the regional vicinity of the project site. **Figure 2** shows the project location. The reservoirs require an aeration and recirculation system to ensure that reasonable water quality parameters are met for visual aesthetics and controlling odors. The proposed project would include the installation of a bubble plume aeration system and a recirculation pipe system to ensure oxygenation and destratification of the reservoirs. Destratification allows for the mixing of the reservoir water to allow for oxygen levels to be maintained throughout the reservoir. **Figure 3** shows the aeration and recirculation systems proposed to be installed in the reservoirs. The proposed project would be implemented in two phases as described below.

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Source: Esri Maps & Data, 2019.

Figure 1
Regional Map



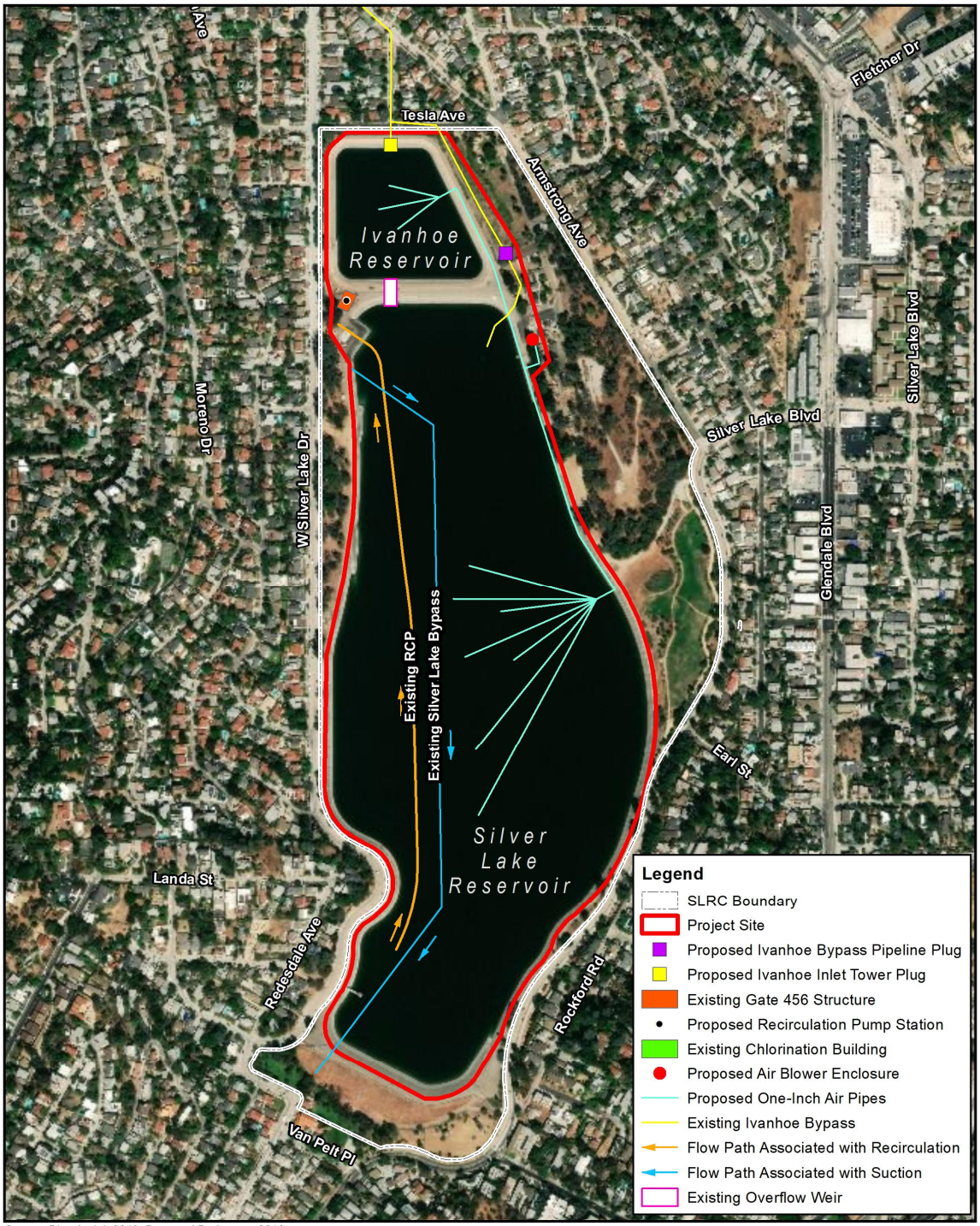
Source: Esri, 2020; Prepared By AECOM, 2020.

0 250 500 1,000 Feet

SLRC Boundary

Project Site

Figure 2
Project Location Map



Source: Bing Aerial, 2019; Prepared By Aecom, 2019.

0 250 500 1,000 Feet

Figure 3
Proposed Project
Aeration and Recirculation System

Phase 1 would include installation of an aeration system consisting of air blowers, air piping to each of the reservoirs, bubble plume system diffusers in each of the reservoirs, and aftercoolers. Two air blowers would be installed for each reservoir, including one in continuous operation and one to serve as a backup. The air blowers would be housed in an enclosure with ventilation and sound insulation. The air blower package enclosure would be located inside an existing chlorination building in the northeast portion of the SLRC between the two reservoirs.

Phase 2 would include the installation of a recirculation system consisting of a recirculation pump station, recirculation piping, and inflow from Ivanhoe Reservoir to Silver Lake Reservoir via the existing overflow weir. Additionally, two concrete plugs and approximately 400 feet of new recirculation piping would be installed within Ivanhoe Reservoir. The concrete plugs would be installed at the existing Ivanhoe Bypass and Ivanhoe Inlet Tower. The recirculation pump equipment would be installed at the existing Gate 456 structure, which is a fenced gate structure on the northwest corner of Silver Lake Reservoir that was historically used for water bypass when both Silver Lake and Ivanhoe Reservoirs were connected to the potable water system. Two submersible recirculation pumps would be installed along the depths of both Silver Lake and Ivanhoe Reservoirs and within the Gate 456 structure, with one pump on duty and the other on standby during normal operations. Both pumps would have the flexibility to operate simultaneously under special conditions. Suction intake would be located at the south end of the Silver Lake Reservoir along the existing Silver Lake Bypass pipeline and discharge would occur at the north end of Ivanhoe Reservoir. The recirculation piping would be connected to the recirculation pump to transfer water from Silver Lake Reservoir to Ivanhoe Reservoir over a partition wall within the Gate 456 structure. Inflow from Ivanhoe Reservoir to Silver Lake Reservoir would occur via the existing weir over the Silver Lake North Dam between the reservoirs.

Construction Activities and Schedule

Construction of Phase 1 is anticipated to begin in November 2020 and take approximately 13 months to complete, concluding in December 2021. Construction of Phase 2 is anticipated to begin at the end of Phase 1 and take approximately 16 months to complete. Construction activities would occur Mondays through Friday from 7:00 a.m. to 3:00 p.m. Construction vehicle access would be available via the existing driveway at the northeastern corner of the SLRC near the intersection of Tesla Avenue and Armstrong Avenue. It is anticipated that haul trucks and construction workers would travel south to the project site from Sun Valley using Interstate 5 (I-5), then travel south on Riverside Drive to Glendale Boulevard, and then west on Lakewood Avenue to Armstrong Avenue. All construction activities would occur completely within the boundaries of the SLRC. Construction staging and laydown areas would also occur within the SLRC.

Phase 1 – Reservoir Aeration. Construction activities at each reservoir would consist of construction of the aeration header at the existing chlorination building, installation of the pre-assembled air blower enclosures for the aeration system, installation of the pipeline connections, and assembly of the diffusers. As previously discussed, the air blowers for the aeration system would be housed in a sound-insulated enclosure. Site preparation for the enclosure would include demolition of existing concrete slabs, installation of 40 polyvinyl chloride (PVC) conduits, and construction and casting of concrete and equipment pads. The concrete and equipment pads would require the site to be cleared, excavated up to three feet, and graded. The enclosure units would be installed within the existing chlorination building behind its concrete walls.

Following construction of the air blower enclosures, air pipes would be installed from the air blowers to diffuser systems at each reservoir. The pipes would be installed underground utilizing trenching and backfilling methods, with the exception of self-weighted lines that would extend within the reservoir.

Approximately 1,021 linear feet of pipeline would be required for Ivanhoe Reservoir and approximately 1,076 linear feet of pipeline would be required for Silver Lake Reservoir. As previously discussed, the diffusers would consist of a diffuser and a manifold, which would be strategically placed across the reservoirs for optimal aeration. After installation of the pipelines and diffuser systems, the existing control panel would be moved from the existing chlorination building to the newly constructed enclosures. The air blowers and associated piping and supports and ventilation system would be installed within the enclosure. Aftercoolers would be located outside of the enclosures, and a sunshade and would be constructed to protect the equipment. It is estimated that 120 megawatt-hours (MWh) of energy would be used by the recirculation network during Phase 1.

It is anticipated that approximately 1,102 cubic yards of materials would be imported to the project site, including 684 cubic yards of crushed aggregate base, 78 cubic yards of asphalt, 98 cubic yards of concrete, and 233 cubic yards of slurry. Additionally, approximately 1,045 cubic yards of materials would be excavated and exported from the project site, including 982 cubic yards of soil, 35 cubic yards of asphalt, and 28 cubic yards of concrete. Materials required for construction would be stored on site, with the exception of asphalt and concrete. Construction of Phase 1 of the proposed project would require a total of approximately 277 truck trips consisting of 101 trips for imported materials, 88 trips for exported materials, and 88 additional haul truck trips.

The estimated daily average of on-site workers would consist of a peak of 29 workers per day. Construction worker vehicle trips would account for approximately 277 roundtrips for the duration of 13 months, with an average of approximately 22 roundtrips per month.

Construction activities for Phase 2 of the proposed project would require approximately 10 pieces of equipment, including an asphalt paver, backhoe loader, barge, butt fusion machine, crane, front end loader, fork lift, generator, roller, and vibrating plate as well as maintenance and dump trucks. All equipment would be stored on site. The estimated daily peak number of equipment on-site would be three pieces with an average of two pieces. The estimated daily peak number of trucks on-site would be six trucks with a daily average of three trucks on-site for the entire duration of Phase 2.

Phase 2 - Recirculation System. Construction activities for Phase 2 include installation of pipeline in Ivanhoe Reservoir, installation of concrete plugs at the existing Ivanhoe Bypass and Ivanhoe Inlet tower, demolition of the existing equipment in the Gate 456 structure, installation of a suction intake on the existing Silver Lake bypass pipeline, and construction of the recirculation pump station within the Gate 456 structure, including a partition wall. Demolition would involve removal of existing electrical and mechanical equipment and an existing concrete slab within the Gate 456 structure.

Prior to installation of the concrete plugs, the water from Ivanhoe Reservoir would be pumped into Silver Lake Reservoir. Following draining of the water, 400 linear feet of pipeline would be placed and casted with concrete within Ivanhoe Reservoir to recirculate water within this reservoir. The concrete plugs would be formed on-site, placed in the Ivanhoe Bypass and then the Ivanhoe Tower Inlet, and finished with additional concrete.

The recirculation pump station equipment would be located within the Gate 456 structure adjacent to the equipment enclosures associated with the Silver Lake Regulating Station. Construction activities for the recirculation pump station would include excavation up to four feet for a 15-foot by 27-foot duct bank, construction of 40 PVC conduits, casting equipment pads and concrete slabs for a 6-foot by 3-foot sized enclosure, installation of the control system, and connecting the control panel to the equipment and pipes. The pumps would be placed below-grade within a hydraulic structure, which would be shielded from view at the

property line. It is estimated that 97 MWh of energy per year would be used by the recirculation network during Phase 2. This would result in total annual energy us of 217 MWh.

Approximately 100 feet of piping would be installed within the Gate 456 structure, which would pump water from Silver Lake Reservoir over a partition wall to Ivanhoe Reservoir. Inflow from Ivanhoe Reservoir to Silver Lake Reservoir would occur via the existing weir over the Silver Lake North Dam between the reservoirs. Following installation of the piping, Ivanhoe Reservoir would be refilled via gravity through the existing Gate 456 structure.

It is anticipated that approximately 167 cubic yards of materials would be imported to the project site consisting of 21 cubic yards of crushed aggregate base, 5 cubic yards of asphalt, 141 cubic yards of concrete, and 8 cubic yards of slurry. Additionally, approximately 64 cubic yards of materials would be exported from the project site consisting of 35 cubic yards of soil, 2 cubic yards of asphalt, and 27 cubic yards of concrete. Materials required for construction, except for asphalt and concrete, would be stored on site. Construction of Phase 2 of the proposed project would require a total of approximately 81 truck trips consisting of 45 trips for imported materials, 8 trips for exported materials, and 28 additional haul truck trips. The estimated daily peak number of on-site workers would be 22 workers. Construction worker vehicle trips would account for approximately 278 roundtrips for the duration of 16 months, with an average of approximately 18 roundtrips per month.

Construction activities for Phase 2 of the proposed project would require approximately 10 pieces of equipment, including an asphalt paver, backhoe loader, barge, butt fusion machine, crane, front end loader, fork lift, generator, roller, and vibrating plate as well as maintenance and dump trucks. All equipment would be stored on site. The estimated daily peak number of equipment on site would be 3 pieces with an average of 2 pieces. The estimated daily peak number of trucks on site would be 6 trucks with a daily average of 3 trucks on site for the entire duration of Phase 2.

GHG Topical Information

GHG emissions refer to a group of emissions that are generally believed to affect global climate conditions. The greenhouse effect compares the Earth and the atmosphere surrounding it to a greenhouse with glass panes. The glass panes in a greenhouse let heat from sunlight in and reduce the amount of heat that escapes. GHGs, such as carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), keep the average surface temperature of the Earth close to 60-degree Fahrenheit (°F). Without the natural greenhouse effect, the Earth's surface would be about 61°F cooler.[1]

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

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

GHG, is dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. **Table 1** shows various GWP.

TABLE 1: GLOBAL WARMING POTENTIAL FOR VARIOUS GREENHOUSE GASES

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

SOURCE: CARB, *First Update to the Climate Change Scoping Plan*, 2014.

Regulatory Framework

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

Federal

***Massachusetts vs. Environmental Protection Agency*, 127 S. Ct. 1438 (2007)**. A Supreme Court ruling that CO_2 and other GHGs are pollutants under the Clean Air Act.

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

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

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

State

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

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

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

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

Assembly Bill 32. The California Global Warming Solutions Act of 2006, also known as Assembly Bill 32, focuses on reducing GHG emissions in California and requires the CARB to adopt rules and regulations that would achieve GHG emissions equivalent to Statewide levels in 1990 by 2020. The 2020 target reductions were estimated to be 174 million metric tons of CO2e. In November 2017 CARB adopted the final 2017 Scoping Plan: The Strategy for Achieving California's 2030 GHG target (2017 Scoping Plan). The 2017 Scoping Plan incorporates, coordinates, and leverages many existing and ongoing efforts and identifies new policies and actions to accomplish the State's climate goals.

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

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

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

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

Regional

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

Local

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

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

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

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

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

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

EXISTING SETTING

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

Table 2 shows GHG emissions from 2008 to 2017 in California. California's GHG emissions have followed a declining trend since 2008. In 2017, emissions from routine emitting activities statewide were 63 million metric tons of CO_2e ($MMTCO_2e$) lower than 2007 levels. Of note, between October 23, 2015 and February 18, 2016, an exceptional natural gas leak event occurred at the Aliso Canyon natural gas storage facility that resulted in unexpected GHG emissions of considerable magnitude. The exceptional incident released approximately 109,000 metric tons of CH_4, which equated to approximately 1.96 $MMTCO_2e$ of unanticipated emissions in 2015 and an additional 0.52 $MMTCO_2e$ in 2016. According to the California Air Resources Board (CARB), these emissions will be mitigated in the future through projects funded by the Southern California

Gas Company based on legal settlement and are presented alongside but tracked separately from routine inventory emissions.[2,3]

TABLE 2: CALIFORNIA GREENHOUSE GAS EMISSIONS INVENTORY TREND

Sector	CO_2e Emissions (Million Metric Tons)									
	2008	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Electricity Generation (In State)	55	54	47	41	51	50	52	50	42	39
Electricity Generation (Imports)	66	48	44	47	45	40	37	34	26	24
Transportation	182	175	170	167	166	166	167	171	173	174
Industrial	100	98	102	101	102	104	105	103	101	101
Commercial	18	19	20	21	21	22	21	22	23	23
Residential	31	31	32	33	31	32	27	28	29	30
Agriculture and Forestry	35	33	34	34	35	34	35	34	34	32
Emissions Total	**487**	**457**	**449**	**444**	**451**	**448**	**445**	**441**	**429**	**424**

SOURCE: CARB, *California Greenhouse Gas Emission Inventory - 2019 Edition*, August 12, 2019.

SIGNIFICANCE THRESHOLDS

This Assessment was undertaken to determine whether construction or operation of the proposed project would have the potential to result in significant environmental impacts related to GHG emissions in the context of the Appendix G Environmental Checklist criteria of the CEQA Statute and Guidelines. Implementation of the proposed project may result in a significant environmental impact related to GHG emissions if the proposed project would:

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

Section 15064.4 of the CEQA Guidelines states that a lead agency should make a good-faith effort to describe, calculate, or estimate the amount of GHG emissions resulting from a project, and that the lead agency should consider the following factors when assessing the significance of impacts from GHG emissions on the environment:

1. The extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting;
2. Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and,
3. The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

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

The CEQA Guidelines require lead agencies to adopt GHG thresholds of significance. When adopting these thresholds, the amended Guideline allows lead agencies to consider thresholds of significance adopted or recommended by other public agencies, or recommended by experts, provided that the thresholds are supported by substantial evidence, and/or to develop their own significance threshold. Neither the City nor the South Coast Air Quality Management District (SCAQMD) has officially adopted a quantitative threshold value for determining the significance of GHG emissions that will be generated by projects under CEQA. The SCAQMD published the *Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold* in October 2008.[4]

The SCAQMD convened a GHG CEQA Significance Threshold Stakeholder Working Group beginning in April of 2008 to examine alternatives for establishing quantitative GHG thresholds. The Working Group proposed a 10,000 metric tons of carbon dioxide equivalents ($MTCO_2e$) per year threshold for industrial projects and a 1,400 $MTCO_2e$ annual threshold for commercial projects. Based on the available threshold concepts recommended by expert agencies, the assessment herein analyses operational emissions against SCAQMD's draft 1,400 $MTCO_2e$ bright-line threshold level. Per SCAQMD, projects below this bright-line significance criteria have a minimal contribution to cumulative global emissions and are considered to have less-than significant impacts

Methodology

GHG emissions that will be generated by the proposed project were estimated using CalEEMod, as recommended by the SCAQMD. CalEEMod quantifies GHG emissions from construction activities and future operation of projects. Sources of GHG emissions during project construction includes heavy-duty off-road diesel equipment and vehicular travel to and from the project site. Sources of GHG emissions during project operation includes energy use to operate mechanical equipment and maintenance trips. It is estimated that maintenance will occur three times per week and require one hour per visit. In accordance with SCAQMD methodology, the total amount of GHG emissions that would be generated by construction of the proposed project was amortized over a 30-year operational period to represent long-term impacts.

Impact Assessment

a) Would the proposed project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment? (Less-than-Significant Impact)

The proposed project would generate GHG emissions primarily from construction activities, maintenance activities, and electricity to operate the aeration and circulation system. **Table 3** presents the estimated emissions of GHGs that would be released to the atmosphere on an annual basis. Construction of the proposed project would produce approximately 448 $MTCO_2e$, which equates to approximately 15 $MTCO_2e$ annually when amortized over a 30-year period. The annual operating emissions for Phase 1 would be approximately 72 $MTCO_2e$ per year, including 72 $MTCO_2e$ attributed to electricity use and approximately 0.5 $MTCO_2e$ for maintenance trips. The annual operating emissions for Phase 2 would be approximately 59 $MTCO_2e$ per year, including 59 $MTCO_2e$ attributed to electricity use and approximately 0.5 $MTCO_2e$ for maintenance trips. The total annual amortized mass emissions of 147 $MTCO_2e$ is substantially below the most applicable quantitative draft interim threshold of 1,400 $MTCO_2e$ per year as recommended by the SCAQMD. Therefore, implementation of the proposed project will result in a less-than-significant impact related to GHG emissions.

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

TABLE 3: ESTIMATED ANNUAL GREENHOUSE GAS EMISSIONS	
Scenario and Source	**Annual GHG Emissions ($MTCO_2e$ per Year)**
Phase 1 Construction Emissions (Direct)	329
Phase 2 Construction Emissions (Direct)	120
Total Construction GHG Emissions (Direct)	448
30-Year Amortized Annual Construction Emissions (Direct) /a/	15
Energy Source Emissions – Electricity (Indirect)	131
Maintenance Trips (Direct)	1.1
Total Annual GHG Emissions	**147**
SCAQMD Draft Interim Significance Threshold	1,400
Exceed Threshold?	**No**
/a/ Based on SCAQMD guidance, the emissions summary also includes construction emissions amortized over a 30-year span. **SOURCE**: TAHA, 2020.	

Mitigation Measure

No mitigation measures are required.

b) Would the proposed project conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs? (Less-than-Significant Impact)

There is no potential for the water aeration and recirculation system to conflict with GHG reduction plans. The GHG plan, policies, and regulations were reviewed for relevant GHG reduction strategies. No GHG reduction strategies were identified relevant to the proposed project. As previously discussed, project-related GHG emissions would be well below the level of significance. GHG emissions are regionally cumulative in nature and it is highly unlikely construction of any individual project would generate GHG emissions of sufficient quantity to conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. Standard construction procedures would be undertaken in accordance with SCAQMD and CARB regulations applicable to heavy duty construction equipment and diesel haul trucks. Adhering to requirements pertinent to construction equipment maintenance and inspections and emissions standards, as well as diesel fleet requirements, including idling time restrictions and maintenance, would ensure that construction of the proposed project would not conflict with GHG emissions reduction efforts.

Mitigation Measures

No mitigation measures are required.

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Southern California Association of Governments, *2016–2040 Regional Transportation Plan/Sustainable Communities Strategy,* April 2016.

Phase 1 Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	5.00	1000sqft	0.11	5,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2021
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	1227.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Phase 1 Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System - Los Angeles-South Coast County, Winter

Project Characteristics -

Land Use -

Construction Phase - From PD

Off-road Equipment - From PD. Other Construction Equipment is "barge".

Off-road Equipment - From PD

Off-road Equipment - From PD

Trips and VMT - From PD

Demolition - 28 cubic yards of concrete demolished

Grading - From PD

Vehicle Trips - 3 trips/week; 156 annual trips

Energy Use - Project produces 120 MWh during Phase 1

Water And Wastewater - No water consumed on site

Solid Waste - No waste generated on site

Construction Off-road Equipment Mitigation - SCAQMD Rule 403

Mobile Land Use Mitigation -

Energy Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	100.00	225.00
tblConstructionPhase	NumDays	1.00	60.00
tblConstructionPhase	PhaseEndDate	4/5/2021	12/17/2021
tblConstructionPhase	PhaseEndDate	11/16/2020	2/5/2021
tblConstructionPhase	PhaseStartDate	11/17/2020	2/8/2021
tblConstructionPhase	PhaseStartDate	11/14/2020	11/16/2020
tblEnergyUse	T24E	2.25	15.15
tblGrading	MaterialExported	0.00	1,045.00

tblGrading	MaterialImported	0.00	1,102.00
tblOffRoadEquipment	HorsePower	187.00	84.00
tblOffRoadEquipment	HorsePower	84.00	81.00
tblOffRoadEquipment	HorsePower	46.00	97.00
tblOffRoadEquipment	LoadFactor	0.41	0.74
tblOffRoadEquipment	LoadFactor	0.74	0.73
tblOffRoadEquipment	LoadFactor	0.45	0.37
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Building Construction
tblSolidWaste	SolidWasteGenerationRate	6.20	0.00
tblTripsAndVMT	HaulingTripLength	20.00	12.40
tblTripsAndVMT	HaulingTripLength	20.00	12.40
tblTripsAndVMT	HaulingTripLength	20.00	12.40
tblTripsAndVMT	HaulingTripNumber	4.00	44.00
tblTripsAndVMT	HaulingTripNumber	268.00	0.00
tblTripsAndVMT	VendorTripNumber	0.00	3.00
tblTripsAndVMT	VendorTripNumber	1.00	0.00
tblTripsAndVMT	WorkerTripNumber	10.00	40.00
tblTripsAndVMT	WorkerTripNumber	8.00	40.00
tblTripsAndVMT	WorkerTripNumber	2.00	58.00
tblVehicleTrips	ST_TR	1.32	0.00

tblVehicleTrips	SU_TR	0.68	0.00
tblVehicleTrips	WD_TR	6.97	0.08
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorToDistribute	1,272.00	0.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	0.00
tblWater	ElectricityIntensityFactorToTreat	111.00	0.00
tblWater	IndoorWaterUseRate	1,156,250.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.8942	14.5170	12.6823	0.0226	0.5787	1.0165	1.4957	0.1444	0.9510	1.0766	0.0000	2,203.5561	2,203.5561	0.3181	0.0000	2,208.8275
2021	1.7326	13.5963	14.8443	0.0265	0.6483	0.9084	1.3876	0.1719	0.8492	0.9749	0.0000	2,572.3510	2,572.3510	0.5562	0.0000	2,586.2558
Maximum	**1.8942**	**14.5170**	**14.8443**	**0.0265**	**0.6483**	**1.0165**	**1.4957**	**0.1719**	**0.9510**	**1.0766**	**0.0000**	**2,572.3510**	**2,572.3510**	**0.5562**	**0.0000**	**2,586.2558**

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	1.8942	14.5170	12.6823	0.0226	0.5276	1.0165	1.4879	0.1366	0.9510	1.0757	0.0000	2,203.5561	2,203.5561	0.3181	0.0000	2,208.8275
2021	1.7326	13.5963	14.8443	0.0265	0.6483	0.9084	1.3839	0.1719	0.8492	0.9739	0.0000	2,572.3510	2,572.3510	0.5562	0.0000	2,586.2558
Maximum	**1.8942**	**14.5170**	**14.8443**	**0.0265**	**0.6483**	**1.0165**	**1.4879**	**0.1719**	**0.9510**	**1.0757**	**0.0000**	**2,572.3510**	**2,572.3510**	**0.5562**	**0.0000**	**2,586.2558**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**4.17**	**0.00**	**0.40**	**2.45**	**0.00**	**0.09**	**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	0.1118	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Energy	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Mobile	8.6000e-004	4.4400e-003	0.0126	4.0000e-005	3.7700e-003	4.0000e-005	3.8100e-003	1.0100e-003	4.0000e-005	1.0400e-003		4.5543	4.5543	2.4000e-004		4.5603
Total	**0.1153**	**0.0288**	**0.0335**	**1.9000e-004**	**3.7700e-003**	**1.8900e-003**	**5.6600e-003**	**1.0100e-003**	**1.8900e-003**	**2.8900e-003**		**33.7254**	**33.7254**	**8.0000e-004**	**5.3000e-004**	**33.9049**

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	0.1118	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Energy	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Mobile	8.6000e-004	4.4400e-003	0.0126	4.0000e-005	3.7700e-003	4.0000e-005	3.8100e-003	1.0100e-003	4.0000e-005	1.0400e-003		4.5543	4.5543	2.4000e-004		4.5603
Total	**0.1153**	**0.0288**	**0.0335**	**1.9000e-004**	**3.7700e-003**	**1.8900e-003**	**5.6600e-003**	**1.0100e-003**	**1.8900e-003**	**2.8900e-003**		**33.7254**	**33.7254**	**8.0000e-004**	**5.3000e-004**	**33.9049**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	11/2/2020	11/13/2020	5	10	
2	Site Preparation	Site Preparation	11/16/2020	2/5/2021	5	60	
3	Building Construction	Building Construction	2/8/2021	12/17/2021	5	225	

Acres of Grading (Site Preparation Phase): 0.5

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
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Generator Sets	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	1.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Site Preparation	Generator Sets	1	8.00	84	0.74
Site Preparation	Graders	1	8.00	84	0.74
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Other Construction Equipment	1	8.00	172	0.42
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Welders	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	40.00	0.00	44.00	14.70	6.90	12.40	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	40.00	3.00	0.00	14.70	6.90	12.40	LD_Mix	HDT_Mix	HHDT
Building Construction	6	58.00	0.00	0.00	14.70	6.90	12.40	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0839	0.0000	0.0839	0.0127	0.0000	0.0127			0.0000			0.0000
Off-Road	1.0899	9.6030	9.4377	0.0159		0.5540	0.5540		0.5405	0.5405		1,514.3235	1,514.3235	0.1773		1,518.7565
Total	**1.0899**	**9.6030**	**9.4377**	**0.0159**	**0.0839**	**0.5540**	**0.6379**	**0.0127**	**0.5405**	**0.5532**		**1,514.3235**	**1,514.3235**	**0.1773**		**1,518.7565**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0276	0.9491	0.2121	2.2700e-003	0.0477	2.6400e-003	0.0504	0.0131	2.5200e-003	0.0156		246.2645	246.2645	0.0196		246.7538
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	0.2044	0.1450	1.6040	4.4500e-003	0.4471	3.7400e-003	0.4508	0.1186	3.4400e-003	0.1220		442.9682	442.9682	0.0140		443.3172
Total	**0.2320**	**1.0941**	**1.8161**	**6.7200e-003**	**0.4948**	**6.3800e-003**	**0.5012**	**0.1317**	**5.9600e-003**	**0.1376**		**689.2326**	**689.2326**	**0.0335**		**690.0710**

3.2 Demolition - 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					0.0327	0.0000	0.0327	4.9500e-003	0.0000	4.9500e-003			0.0000			0.0000
Off-Road	1.0899	9.6030	9.4377	0.0159		0.5540	0.5540		0.5405	0.5405	0.0000	1,514.3235	1,514.3235	0.1773		1,518.7565
Total	**1.0899**	**9.6030**	**9.4377**	**0.0159**	**0.0327**	**0.5540**	**0.5867**	**4.9500e-003**	**0.5405**	**0.5455**	**0.0000**	**1,514.3235**	**1,514.3235**	**0.1773**		**1,518.7565**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0276	0.9491	0.2121	2.2700e-003	0.0477	2.6400e-003	0.0504	0.0131	2.5200e-003	0.0156		246.2645	246.2645	0.0196		246.7538
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	0.2044	0.1450	1.6040	4.4500e-003	0.4471	3.7400e-003	0.4508	0.1186	3.4400e-003	0.1220		442.9682	442.9682	0.0140		443.3172
Total	**0.2320**	**1.0941**	**1.8161**	**6.7200e-003**	**0.4948**	**6.3800e-003**	**0.5012**	**0.1317**	**5.9600e-003**	**0.1376**		**689.2326**	**689.2326**	**0.0335**		**690.0710**

3.3 Site Preparation - 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					0.0129	0.0000	0.0129	1.5700e-003	0.0000	1.5700e-003			0.0000			0.0000
Off-Road	1.6786	14.0529	10.9860	0.0150		1.0113	1.0113		0.9461	0.9461		1,438.3443	1,438.3443	0.2988		1,445.8135
Total	**1.6786**	**14.0529**	**10.9860**	**0.0150**	**0.0129**	**1.0113**	**1.0241**	**1.5700e-003**	**0.9461**	**0.9476**		**1,438.3443**	**1,438.3443**	**0.2988**		**1,445.8135**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0112	0.3191	0.0922	7.6000e-004	0.0192	1.5300e-003	0.0207	5.5300e-003	1.4600e-003	6.9900e-003		80.8347	80.8347	5.4100e-003		80.9699
Worker	0.2044	0.1450	1.6040	4.4500e-003	0.4471	3.7400e-003	0.4508	0.1186	3.4400e-003	0.1220		442.9682	442.9682	0.0140		443.3172
Total	**0.2156**	**0.4640**	**1.6963**	**5.2100e-003**	**0.4663**	**5.2700e-003**	**0.4716**	**0.1241**	**4.9000e-003**	**0.1290**		**523.8029**	**523.8029**	**0.0194**		**524.2871**

3.3 Site Preparation - 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					5.0200e-003	0.0000	5.0200e-003	6.1000e-004	0.0000	6.1000e-004			0.0000			0.0000
Off-Road	1.6786	14.0529	10.9860	0.0150		1.0113	1.0113		0.9461	0.9461	0.0000	1,438.3443	1,438.3443	0.2988		1,445.8135
Total	**1.6786**	**14.0529**	**10.9860**	**0.0150**	**5.0200e-003**	**1.0113**	**1.0163**	**6.1000e-004**	**0.9461**	**0.9467**	**0.0000**	**1,438.3443**	**1,438.3443**	**0.2988**		**1,445.8135**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0112	0.3191	0.0922	7.6000e-004	0.0192	1.5300e-003	0.0207	5.5300e-003	1.4600e-003	6.9900e-003		80.8347	80.8347	5.4100e-003		80.9699
Worker	0.2044	0.1450	1.6040	4.4500e-003	0.4471	3.7400e-003	0.4508	0.1186	3.4400e-003	0.1220		442.9682	442.9682	0.0140		443.3172
Total	**0.2156**	**0.4640**	**1.6963**	**5.2100e-003**	**0.4663**	**5.2700e-003**	**0.4716**	**0.1241**	**4.9000e-003**	**0.1290**		**523.8029**	**523.8029**	**0.0194**		**524.2871**

3.3 Site Preparation - 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					0.0129	0.0000	0.0129	1.5700e-003	0.0000	1.5700e-003			0.0000			0.0000
Off-Road	1.5323	12.8736	10.8255	0.0150		0.9042	0.9042		0.8453	0.8453		1,438.1831	1,438.1831	0.2954		1,445.5688
Total	**1.5323**	**12.8736**	**10.8255**	**0.0150**	**0.0129**	**0.9042**	**0.9171**	**1.5700e-003**	**0.8453**	**0.8469**		**1,438.1831**	**1,438.1831**	**0.2954**		**1,445.5688**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	9.5700e-003	0.2907	0.0842	7.5000e-004	0.0192	6.1000e-004	0.0198	5.5300e-003	5.9000e-004	6.1200e-003		80.2037	80.2037	5.1800e-003		80.3331
Worker	0.1907	0.1305	1.4730	4.3000e-003	0.4471	3.6100e-003	0.4507	0.1186	3.3300e-003	0.1219		428.9004	428.9004	0.0126		429.2160
Total	**0.2003**	**0.4211**	**1.5573**	**5.0500e-003**	**0.4663**	**4.2200e-003**	**0.4705**	**0.1241**	**3.9200e-003**	**0.1280**		**509.1041**	**509.1041**	**0.0178**		**509.5491**

3.3 Site Preparation - 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					5.0200e-003	0.0000	5.0200e-003	6.1000e-004	0.0000	6.1000e-004			0.0000			0.0000
Off-Road	1.5323	12.8736	10.8255	0.0150		0.9042	0.9042		0.8453	0.8453	0.0000	1,438.1831	1,438.1831	0.2954		1,445.5688
Total	**1.5323**	**12.8736**	**10.8255**	**0.0150**	**5.0200e-003**	**0.9042**	**0.9092**	**6.1000e-004**	**0.8453**	**0.8459**	**0.0000**	**1,438.1831**	**1,438.1831**	**0.2954**		**1,445.5688**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	9.5700e-003	0.2907	0.0842	7.5000e-004	0.0192	6.1000e-004	0.0198	5.5300e-003	5.9000e-004	6.1200e-003		80.2037	80.2037	5.1800e-003		80.3331
Worker	0.1907	0.1305	1.4730	4.3000e-003	0.4471	3.6100e-003	0.4507	0.1186	3.3300e-003	0.1219		428.9004	428.9004	0.0126		429.2160
Total	**0.2003**	**0.4211**	**1.5573**	**5.0500e-003**	**0.4663**	**4.2200e-003**	**0.4705**	**0.1241**	**3.9200e-003**	**0.1280**		**509.1041**	**509.1041**	**0.0178**		**509.5491**

3.4 Building Construction - 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					
Off-Road	1.3580	13.4071	12.7084	0.0202		0.7303	0.7303		0.6812	0.6812		1,950.4454	1,950.4454	0.5379		1,963.8927
Total	**1.3580**	**13.4071**	**12.7084**	**0.0202**		**0.7303**	**0.7303**		**0.6812**	**0.6812**		**1,950.4454**	**1,950.4454**	**0.5379**		**1,963.8927**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2766	0.1892	2.1359	6.2400e-003	0.6483	5.2400e-003	0.6535	0.1719	4.8300e-003	0.1768		621.9056	621.9056	0.0183		622.3631
Total	**0.2766**	**0.1892**	**2.1359**	**6.2400e-003**	**0.6483**	**5.2400e-003**	**0.6535**	**0.1719**	**4.8300e-003**	**0.1768**		**621.9056**	**621.9056**	**0.0183**		**622.3631**

3.4 Building Construction - 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					
Off-Road	1.3580	13.4071	12.7084	0.0202		0.7303	0.7303		0.6812	0.6812	0.0000	1,950.4454	1,950.4454	0.5379		1,963.8927
Total	**1.3580**	**13.4071**	**12.7084**	**0.0202**		**0.7303**	**0.7303**		**0.6812**	**0.6812**	**0.0000**	**1,950.4454**	**1,950.4454**	**0.5379**		**1,963.8927**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2766	0.1892	2.1359	6.2400e-003	0.6483	5.2400e-003	0.6535	0.1719	4.8300e-003	0.1768		621.9056	621.9056	0.0183		622.3631
Total	**0.2766**	**0.1892**	**2.1359**	**6.2400e-003**	**0.6483**	**5.2400e-003**	**0.6535**	**0.1719**	**4.8300e-003**	**0.1768**		**621.9056**	**621.9056**	**0.0183**		**622.3631**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	8.6000e-004	4.4400e-003	0.0126	4.0000e-005	3.7700e-003	4.0000e-005	3.8100e-003	1.0100e-003	4.0000e-005	1.0400e-003		4.5543	4.5543	2.4000e-004		4.5603
Unmitigated	8.6000e-004	4.4400e-003	0.0126	4.0000e-005	3.7700e-003	4.0000e-005	3.8100e-003	1.0100e-003	4.0000e-005	1.0400e-003		4.5543	4.5543	2.4000e-004		4.5603

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	0.40	0.00	0.00	1,265	1,265
Total	0.40	0.00	0.00	1,265	1,265

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	16.60	8.40	6.90	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.547192	0.045177	0.202743	0.121510	0.016147	0.006143	0.019743	0.029945	0.002479	0.002270	0.005078	0.000682	0.000891

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive 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	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
NaturalGas Unmitigated	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434

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	247.945	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Total		**2.6700e-003**	**0.0243**	**0.0204**	**1.5000e-004**		**1.8500e-003**	**1.8500e-003**		**1.8500e-003**	**1.8500e-003**		**29.1700**	**29.1700**	**5.6000e-004**	**5.3000e-004**	**29.3434**

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	0.247945	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Total		**2.6700e-003**	**0.0243**	**0.0204**	**1.5000e-004**		**1.8500e-003**	**1.8500e-003**		**1.8500e-003**	**1.8500e-003**		**29.1700**	**29.1700**	**5.6000e-004**	**5.3000e-004**	**29.3434**

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	0.1118	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Unmitigated	0.1118	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-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	0.0127					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0990					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.0000e-005	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Total	**0.1118**	**0.0000**	**5.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.0900e-003**	**1.0900e-003**	**0.0000**		**1.1700e-003**

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	0.0127					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0990					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.0000e-005	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Total	**0.1118**	**0.0000**	**5.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.0900e-003**	**1.0900e-003**	**0.0000**		**1.1700e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 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

Phase 1 Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	5.00	1000sqft	0.11	5,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2021
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	1227.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Phase 1 Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System - Los Angeles-South Coast County, Annual

Project Characteristics -

Land Use -

Construction Phase - From PD

Off-road Equipment - From PD. Other Construction Equipment is "barge".

Off-road Equipment - From PD

Off-road Equipment - From PD

Trips and VMT - From PD

Demolition - 28 cubic yards of concrete demolished

Grading - From PD

Vehicle Trips - 3 trips/week; 156 annual trips

Energy Use - Energy consumption of recirculation network is 120Mwh for Phase 1

Water And Wastewater - No water consumed on site

Solid Waste - No waste generated on site

Construction Off-road Equipment Mitigation - SCAQMD Rule 403

Mobile Land Use Mitigation -

Energy Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblEnergyUse	T24E	2.25	15.15
tblGrading	MaterialExported	0.00	1,045.00
tblGrading	MaterialImported	0.00	1,102.00
tblOffRoadEquipment	HorsePower	187.00	84.00
tblOffRoadEquipment	HorsePower	84.00	81.00
tblOffRoadEquipment	HorsePower	46.00	97.00
tblOffRoadEquipment	LoadFactor	0.41	0.74
tblOffRoadEquipment	LoadFactor	0.74	0.73

tblOffRoadEquipment	LoadFactor	0.45	0.37
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblSolidWaste	SolidWasteGenerationRate	6.20	0.00
tblTripsAndVMT	HaulingTripLength	20.00	12.40
tblTripsAndVMT	HaulingTripLength	20.00	12.40
tblTripsAndVMT	HaulingTripLength	20.00	12.40
tblTripsAndVMT	HaulingTripNumber	4.00	44.00
tblTripsAndVMT	HaulingTripNumber	268.00	0.00
tblTripsAndVMT	VendorTripNumber	0.00	3.00
tblTripsAndVMT	VendorTripNumber	1.00	0.00
tblTripsAndVMT	WorkerTripNumber	10.00	40.00
tblTripsAndVMT	WorkerTripNumber	8.00	40.00
tblTripsAndVMT	WorkerTripNumber	2.00	58.00
tblVehicleTrips	ST_TR	1.32	0.00
tblVehicleTrips	SU_TR	0.68	0.00
tblVehicleTrips	WD_TR	6.97	0.08
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorToDistribute	1,272.00	0.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	0.00
tblWater	ElectricityIntensityFactorToTreat	111.00	0.00
tblWater	IndoorWaterUseRate	1,156,250.00	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.0192	0.1613	0.1622	3.0000e-004	7.5900e-003	8.9600e-003	0.0166	1.9200e-003	8.4700e-003	0.0104	0.0000	26.2915	26.2915	4.4100e-003	0.0000	26.4017
2021	0.0699	0.5917	0.6482	1.1600e-003	0.0277	0.0320	0.0596	7.3400e-003	0.0298	0.0372	0.0000	101.9199	101.9199	0.0220	0.0000	102.4689
Maximum	**0.0699**	**0.5917**	**0.6482**	**1.1600e-003**	**0.0277**	**0.0320**	**0.0596**	**7.3400e-003**	**0.0298**	**0.0372**	**0.0000**	**101.9199**	**101.9199**	**0.0220**	**0.0000**	**102.4689**

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	0.0192	0.1613	0.1622	3.0000e-004	7.1000e-003	8.9600e-003	0.0161	1.8500e-003	8.4700e-003	0.0103	0.0000	26.2915	26.2915	4.4100e-003	0.0000	26.4017
2021	0.0699	0.5917	0.6482	1.1600e-003	0.0277	0.0320	0.0596	7.3400e-003	0.0298	0.0372	0.0000	101.9198	101.9198	0.0220	0.0000	102.4688
Maximum	**0.0699**	**0.5917**	**0.6482**	**1.1600e-003**	**0.0277**	**0.0320**	**0.0596**	**7.3400e-003**	**0.0298**	**0.0372**	**0.0000**	**101.9198**	**101.9198**	**0.0220**	**0.0000**	**102.4688**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**1.39**	**0.00**	**0.64**	**0.76**	**0.00**	**0.15**	**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	11-30-2020	2-27-2021	0.4895	0.4895
2	2-28-2021	5-29-2021	0.3530	0.3530
		Highest	0.4895	0.4895

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	0.0204	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.2000e-004	1.2000e-004	0.0000	0.0000	1.3000e-004
Energy	4.9000e-004	4.4400e-003	3.7300e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	71.6648	71.6648	1.6700e-003	4.2000e-004	71.8303
Mobile	1.1000e-004	5.9000e-004	1.6600e-003	1.0000e-005	4.8000e-004	1.0000e-005	4.9000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.5444	0.5444	3.0000e-005	0.0000	0.5451
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
Total	**0.0210**	**5.0300e-003**	**5.4500e-003**	**4.0000e-005**	**4.8000e-004**	**3.5000e-004**	**8.3000e-004**	**1.3000e-004**	**3.4000e-004**	**4.7000e-004**	**0.0000**	**72.2093**	**72.2093**	**1.7000e-003**	**4.2000e-004**	**72.3755**

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	0.0204	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.2000e-004	1.2000e-004	0.0000	0.0000	1.3000e-004
Energy	4.9000e-004	4.4400e-003	3.7300e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	71.6648	71.6648	1.6700e-003	4.2000e-004	71.8303
Mobile	1.1000e-004	5.9000e-004	1.6600e-003	1.0000e-005	4.8000e-004	1.0000e-005	4.9000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.5444	0.5444	3.0000e-005	0.0000	0.5451
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
Total	**0.0210**	**5.0300e-003**	**5.4500e-003**	**4.0000e-005**	**4.8000e-004**	**3.5000e-004**	**8.3000e-004**	**1.3000e-004**	**3.4000e-004**	**4.7000e-004**	**0.0000**	**72.2093**	**72.2093**	**1.7000e-003**	**4.2000e-004**	**72.3755**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	11/30/2020	12/11/2020	5	10	
2	Site Preparation	Site Preparation	12/12/2020	12/14/2020	5	1	
3	Building Construction	Building Construction	12/15/2020	5/3/2021	5	100	

Acres of Grading (Site Preparation Phase): 0.5

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
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Generator Sets	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	1.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Site Preparation	Generator Sets	1	8.00	84	0.74
Site Preparation	Graders	1	8.00	84	0.74
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Other Construction Equipment	1	8.00	172	0.42
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Welders	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	40.00	0.00	44.00	14.70	6.90	12.40	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	40.00	3.00	0.00	14.70	6.90	12.40	LD_Mix	HDT_Mix	HHDT
Building Construction	6	58.00	0.00	0.00	14.70	6.90	12.40	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.2000e-004	0.0000	4.2000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.4500e-003	0.0480	0.0472	8.0000e-005		2.7700e-003	2.7700e-003		2.7000e-003	2.7000e-003	0.0000	6.8689	6.8689	8.0000e-004	0.0000	6.8890
Total	**5.4500e-003**	**0.0480**	**0.0472**	**8.0000e-005**	**4.2000e-004**	**2.7700e-003**	**3.1900e-003**	**6.0000e-005**	**2.7000e-003**	**2.7600e-003**	**0.0000**	**6.8689**	**6.8689**	**8.0000e-004**	**0.0000**	**6.8890**

3.2 Demolition - 2020

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	1.4000e-004	4.8400e-003	1.0100e-003	1.0000e-005	2.3000e-004	1.0000e-005	2.5000e-004	6.0000e-005	1.0000e-005	8.0000e-005	0.0000	1.1341	1.1341	9.0000e-005	0.0000	1.1363
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	9.2000e-004	7.4000e-004	8.2300e-003	2.0000e-005	2.1900e-003	2.0000e-005	2.2100e-003	5.8000e-004	2.0000e-005	6.0000e-004	0.0000	2.0427	2.0427	6.0000e-005	0.0000	2.0443
Total	**1.0600e-003**	**5.5800e-003**	**9.2400e-003**	**3.0000e-005**	**2.4200e-003**	**3.0000e-005**	**2.4600e-003**	**6.4000e-004**	**3.0000e-005**	**6.8000e-004**	**0.0000**	**3.1768**	**3.1768**	**1.5000e-004**	**0.0000**	**3.1806**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.6000e-004	0.0000	1.6000e-004	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.4500e-003	0.0480	0.0472	8.0000e-005		2.7700e-003	2.7700e-003		2.7000e-003	2.7000e-003	0.0000	6.8689	6.8689	8.0000e-004	0.0000	6.8890
Total	**5.4500e-003**	**0.0480**	**0.0472**	**8.0000e-005**	**1.6000e-004**	**2.7700e-003**	**2.9300e-003**	**2.0000e-005**	**2.7000e-003**	**2.7200e-003**	**0.0000**	**6.8689**	**6.8689**	**8.0000e-004**	**0.0000**	**6.8890**

3.2 Demolition - 2020

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	1.4000e-004	4.8400e-003	1.0100e-003	1.0000e-005	2.3000e-004	1.0000e-005	2.5000e-004	6.0000e-005	1.0000e-005	8.0000e-005	0.0000	1.1341	1.1341	9.0000e-005	0.0000	1.1363
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	9.2000e-004	7.4000e-004	8.2300e-003	2.0000e-005	2.1900e-003	2.0000e-005	2.2100e-003	5.8000e-004	2.0000e-005	6.0000e-004	0.0000	2.0427	2.0427	6.0000e-005	0.0000	2.0443
Total	**1.0600e-003**	**5.5800e-003**	**9.2400e-003**	**3.0000e-005**	**2.4200e-003**	**3.0000e-005**	**2.4600e-003**	**6.4000e-004**	**3.0000e-005**	**6.8000e-004**	**0.0000**	**3.1768**	**3.1768**	**1.5000e-004**	**0.0000**	**3.1806**

3.3 Site Preparation - 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					3.9000e-004	0.0000	3.9000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.4000e-004	7.0300e-003	5.4900e-003	1.0000e-005		5.1000e-004	5.1000e-004		4.7000e-004	4.7000e-004	0.0000	0.6524	0.6524	1.4000e-004	0.0000	0.6558
Total	**8.4000e-004**	**7.0300e-003**	**5.4900e-003**	**1.0000e-005**	**3.9000e-004**	**5.1000e-004**	**9.0000e-004**	**5.0000e-005**	**4.7000e-004**	**5.2000e-004**	**0.0000**	**0.6524**	**0.6524**	**1.4000e-004**	**0.0000**	**0.6558**

3.3 Site Preparation - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-005	1.6000e-004	4.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0373	0.0373	0.0000	0.0000	0.0373
Worker	9.0000e-005	7.0000e-005	8.2000e-004	0.0000	2.2000e-004	0.0000	2.2000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.2043	0.2043	1.0000e-005	0.0000	0.2044
Total	**1.0000e-004**	**2.3000e-004**	**8.6000e-004**	**0.0000**	**2.3000e-004**	**0.0000**	**2.3000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.2415**	**0.2415**	**1.0000e-005**	**0.0000**	**0.2418**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.5000e-004	0.0000	1.5000e-004	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.4000e-004	7.0300e-003	5.4900e-003	1.0000e-005		5.1000e-004	5.1000e-004		4.7000e-004	4.7000e-004	0.0000	0.6524	0.6524	1.4000e-004	0.0000	0.6558
Total	**8.4000e-004**	**7.0300e-003**	**5.4900e-003**	**1.0000e-005**	**1.5000e-004**	**5.1000e-004**	**6.6000e-004**	**2.0000e-005**	**4.7000e-004**	**4.9000e-004**	**0.0000**	**0.6524**	**0.6524**	**1.4000e-004**	**0.0000**	**0.6558**

3.3 Site Preparation - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-005	1.6000e-004	4.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0373	0.0373	0.0000	0.0000	0.0373
Worker	9.0000e-005	7.0000e-005	8.2000e-004	0.0000	2.2000e-004	0.0000	2.2000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.2043	0.2043	1.0000e-005	0.0000	0.2044
Total	**1.0000e-004**	**2.3000e-004**	**8.6000e-004**	**0.0000**	**2.3000e-004**	**0.0000**	**2.3000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.2415**	**0.2415**	**1.0000e-005**	**0.0000**	**0.2418**

3.4 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.9800e-003	0.0991	0.0839	1.3000e-004		5.6100e-003	5.6100e-003		5.2300e-003	5.2300e-003	0.0000	11.5014	11.5014	3.1900e-003	0.0000	11.5811
Total	**9.9800e-003**	**0.0991**	**0.0839**	**1.3000e-004**		**5.6100e-003**	**5.6100e-003**		**5.2300e-003**	**5.2300e-003**	**0.0000**	**11.5014**	**11.5014**	**3.1900e-003**	**0.0000**	**11.5811**

3.4 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7400e-003	1.4000e-003	0.0155	4.0000e-005	4.1300e-003	4.0000e-005	4.1700e-003	1.1000e-003	3.0000e-005	1.1300e-003	0.0000	3.8505	3.8505	1.2000e-004	0.0000	3.8535
Total	**1.7400e-003**	**1.4000e-003**	**0.0155**	**4.0000e-005**	**4.1300e-003**	**4.0000e-005**	**4.1700e-003**	**1.1000e-003**	**3.0000e-005**	**1.1300e-003**	**0.0000**	**3.8505**	**3.8505**	**1.2000e-004**	**0.0000**	**3.8535**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.9800e-003	0.0991	0.0839	1.3000e-004		5.6100e-003	5.6100e-003		5.2300e-003	5.2300e-003	0.0000	11.5014	11.5014	3.1900e-003	0.0000	11.5811
Total	**9.9800e-003**	**0.0991**	**0.0839**	**1.3000e-004**		**5.6100e-003**	**5.6100e-003**		**5.2300e-003**	**5.2300e-003**	**0.0000**	**11.5014**	**11.5014**	**3.1900e-003**	**0.0000**	**11.5811**

3.4 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7400e-003	1.4000e-003	0.0155	4.0000e-005	4.1300e-003	4.0000e-005	4.1700e-003	1.1000e-003	3.0000e-005	1.1300e-003	0.0000	3.8505	3.8505	1.2000e-004	0.0000	3.8535
Total	**1.7400e-003**	**1.4000e-003**	**0.0155**	**4.0000e-005**	**4.1300e-003**	**4.0000e-005**	**4.1700e-003**	**1.1000e-003**	**3.0000e-005**	**1.1300e-003**	**0.0000**	**3.8505**	**3.8505**	**1.2000e-004**	**0.0000**	**3.8535**

3.4 Building Construction - 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					
Off-Road	0.0591	0.5832	0.5528	8.8000e-004		0.0318	0.0318		0.0296	0.0296	0.0000	76.9695	76.9695	0.0212	0.0000	77.5002
Total	**0.0591**	**0.5832**	**0.5528**	**8.8000e-004**		**0.0318**	**0.0318**		**0.0296**	**0.0296**	**0.0000**	**76.9695**	**76.9695**	**0.0212**	**0.0000**	**77.5002**

3.4 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0109	8.4500e-003	0.0954	2.8000e-004	0.0277	2.3000e-004	0.0279	7.3400e-003	2.1000e-004	7.5500e-003	0.0000	24.9504	24.9504	7.3000e-004	0.0000	24.9687
Total	**0.0109**	**8.4500e-003**	**0.0954**	**2.8000e-004**	**0.0277**	**2.3000e-004**	**0.0279**	**7.3400e-003**	**2.1000e-004**	**7.5500e-003**	**0.0000**	**24.9504**	**24.9504**	**7.3000e-004**	**0.0000**	**24.9687**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0591	0.5832	0.5528	8.8000e-004		0.0318	0.0318		0.0296	0.0296	0.0000	76.9694	76.9694	0.0212	0.0000	77.5001
Total	**0.0591**	**0.5832**	**0.5528**	**8.8000e-004**		**0.0318**	**0.0318**		**0.0296**	**0.0296**	**0.0000**	**76.9694**	**76.9694**	**0.0212**	**0.0000**	**77.5001**

3.4 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0109	8.4500e-003	0.0954	2.8000e-004	0.0277	2.3000e-004	0.0279	7.3400e-003	2.1000e-004	7.5500e-003	0.0000	24.9504	24.9504	7.3000e-004	0.0000	24.9687
Total	**0.0109**	**8.4500e-003**	**0.0954**	**2.8000e-004**	**0.0277**	**2.3000e-004**	**0.0279**	**7.3400e-003**	**2.1000e-004**	**7.5500e-003**	**0.0000**	**24.9504**	**24.9504**	**7.3000e-004**	**0.0000**	**24.9687**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.1000e-004	5.9000e-004	1.6600e-003	1.0000e-005	4.8000e-004	1.0000e-005	4.9000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.5444	0.5444	3.0000e-005	0.0000	0.5451
Unmitigated	1.1000e-004	5.9000e-004	1.6600e-003	1.0000e-005	4.8000e-004	1.0000e-005	4.9000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.5444	0.5444	3.0000e-005	0.0000	0.5451

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	0.40	0.00	0.00	1,265	1,265
Total	0.40	0.00	0.00	1,265	1,265

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	16.60	8.40	6.90	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.547192	0.045177	0.202743	0.121510	0.016147	0.006143	0.019743	0.029945	0.002479	0.002270	0.005078	0.000682	0.000891

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	66.8354	66.8354	1.5800e-003	3.3000e-004	66.9722
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	66.8354	66.8354	1.5800e-003	3.3000e-004	66.9722
NaturalGas Mitigated	4.9000e-004	4.4400e-003	3.7300e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.8294	4.8294	9.0000e-005	9.0000e-005	4.8581
NaturalGas Unmitigated	4.9000e-004	4.4400e-003	3.7300e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.8294	4.8294	9.0000e-005	9.0000e-005	4.8581

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	90500	4.9000e-004	4.4400e-003	3.7300e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.8294	4.8294	9.0000e-005	9.0000e-005	4.8581
Total		**4.9000e-004**	**4.4400e-003**	**3.7300e-003**	**3.0000e-005**		**3.4000e-004**	**3.4000e-004**		**3.4000e-004**	**3.4000e-004**	**0.0000**	**4.8294**	**4.8294**	**9.0000e-005**	**9.0000e-005**	**4.8581**

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 Light Industry	90500	4.9000e-004	4.4400e-003	3.7300e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.8294	4.8294	9.0000e-005	9.0000e-005	4.8581
Total		**4.9000e-004**	**4.4400e-003**	**3.7300e-003**	**3.0000e-005**		**3.4000e-004**	**3.4000e-004**		**3.4000e-004**	**3.4000e-004**	**0.0000**	**4.8294**	**4.8294**	**9.0000e-005**	**9.0000e-005**	**4.8581**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	120000	66.8354	1.5800e-003	3.3000e-004	66.9722
Total		**66.8354**	**1.5800e-003**	**3.3000e-004**	**66.9722**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	120000	66.8354	1.5800e-003	3.3000e-004	66.9722
Total		**66.8354**	**1.5800e-003**	**3.3000e-004**	**66.9722**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0204	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.2000e-004	1.2000e-004	0.0000	0.0000	1.3000e-004
Unmitigated	0.0204	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.2000e-004	1.2000e-004	0.0000	0.0000	1.3000e-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	2.3200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0181					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	1.2000e-004	1.2000e-004	0.0000	0.0000	1.3000e-004
Total	**0.0204**	**0.0000**	**6.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.2000e-004**	**1.2000e-004**	**0.0000**	**0.0000**	**1.3000e-004**

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	2.3200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0181					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	1.2000e-004	1.2000e-004	0.0000	0.0000	1.3000e-004
Total	**0.0204**	**0.0000**	**6.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.2000e-004**	**1.2000e-004**	**0.0000**	**0.0000**	**1.3000e-004**

7.0 Water Detail

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 Light Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

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
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

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

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
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

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
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Phase 2 Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	5.00	1000sqft	0.11	5,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2023
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	1227.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Phase 2 Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System - Los Angeles-South Coast County, Winter

Project Characteristics -

Land Use -

Construction Phase - From PD

Off-road Equipment - From PD. Other Construction Equipment is "barge".

Off-road Equipment - From PD

Off-road Equipment - From PD

Trips and VMT - From PD

Demolition - 27 cubic yards of concrete demolished

Grading - From PD

Vehicle Trips - 3 trips/week; 156 annual trips

Energy Use - Project produces 96.58 MWh annually during Phase 2

Water And Wastewater - No water usage on site

Solid Waste - No solid waste generated on site

Construction Off-road Equipment Mitigation - SCAQMD Rule 403

Mobile Land Use Mitigation -

Energy Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblEnergyUse	T24E	2.25	10.47
tblFleetMix	HHD	0.03	0.03
tblFleetMix	LDA	0.55	0.55
tblFleetMix	LDT1	0.04	0.05
tblFleetMix	LDT2	0.21	0.20
tblFleetMix	LHD1	0.02	0.02
tblFleetMix	LHD2	6.2270e-003	6.1430e-003
tblFleetMix	MCY	5.1840e-003	5.0780e-003

tblFleetMix	MDV	0.12	0.12
tblFleetMix	MH	8.6200e-004	8.9100e-004
tblFleetMix	MHD	0.02	0.02
tblFleetMix	OBUS	2.5460e-003	2.4790e-003
tblFleetMix	SBUS	6.9200e-004	6.8200e-004
tblFleetMix	UBUS	2.1330e-003	2.2700e-003
tblGrading	MaterialExported	0.00	64.00
tblGrading	MaterialImported	0.00	167.00
tblOffRoadEquipment	HorsePower	187.00	84.00
tblOffRoadEquipment	HorsePower	84.00	81.00
tblOffRoadEquipment	HorsePower	46.00	97.00
tblOffRoadEquipment	LoadFactor	0.41	0.74
tblOffRoadEquipment	LoadFactor	0.74	0.73
tblOffRoadEquipment	LoadFactor	0.45	0.37
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblSolidWaste	SolidWasteGenerationRate	6.20	0.00
tblTripsAndVMT	HaulingTripLength	20.00	12.40
tblTripsAndVMT	HaulingTripLength	20.00	12.40
tblTripsAndVMT	HaulingTripLength	20.00	12.40
tblTripsAndVMT	HaulingTripNumber	4.00	14.00
tblTripsAndVMT	HaulingTripNumber	29.00	0.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	1.00	0.00
tblTripsAndVMT	WorkerTripNumber	10.00	30.00
tblTripsAndVMT	WorkerTripNumber	8.00	30.00
tblTripsAndVMT	WorkerTripNumber	2.00	44.00

tblVehicleEF	HHD	0.48	0.65
tblVehicleEF	HHD	0.09	0.09
tblVehicleEF	HHD	0.07	0.09
tblVehicleEF	HHD	1.63	2.61
tblVehicleEF	HHD	1.06	1.16
tblVehicleEF	HHD	3.33	3.36
tblVehicleEF	HHD	4,465.78	4,729.35
tblVehicleEF	HHD	1,572.96	1,660.44
tblVehicleEF	HHD	10.75	10.55
tblVehicleEF	HHD	14.30	21.63
tblVehicleEF	HHD	2.12	4.20
tblVehicleEF	HHD	19.50	19.57
tblVehicleEF	HHD	0.01	0.02
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	6.2960e-003	0.02
tblVehicleEF	HHD	9.1000e-005	8.8000e-005
tblVehicleEF	HHD	9.6000e-003	0.02
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8400e-003	8.8360e-003
tblVehicleEF	HHD	6.0240e-003	0.02
tblVehicleEF	HHD	8.3000e-005	8.1000e-005
tblVehicleEF	HHD	1.0300e-004	1.1100e-004
tblVehicleEF	HHD	4.5010e-003	4.8720e-003
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tblVehicleEF	HHD	7.8000e-005	8.3000e-005
tblVehicleEF	HHD	0.09	0.15

tblVehicleEF	HHD	3.7200e-004	4.3200e-004
tblVehicleEF	HHD	0.08	0.09
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.01	0.02
tblVehicleEF	HHD	1.6200e-004	1.6100e-004
tblVehicleEF	HHD	1.0300e-004	1.1100e-004
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tblVehicleEF	HHD	0.49	0.76
tblVehicleEF	HHD	7.8000e-005	8.3000e-005
tblVehicleEF	HHD	0.20	0.26
tblVehicleEF	HHD	3.7200e-004	4.3200e-004
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tblVehicleEF	HHD	0.45	0.61
tblVehicleEF	HHD	0.09	0.09
tblVehicleEF	HHD	0.07	0.08
tblVehicleEF	HHD	1.19	1.90
tblVehicleEF	HHD	1.07	1.17
tblVehicleEF	HHD	3.16	3.19
tblVehicleEF	HHD	4,731.10	5,008.69
tblVehicleEF	HHD	1,572.96	1,660.44
tblVehicleEF	HHD	10.75	10.55
tblVehicleEF	HHD	14.76	22.32
tblVehicleEF	HHD	2.01	3.97
tblVehicleEF	HHD	19.49	19.56
tblVehicleEF	HHD	8.4600e-003	0.01
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04

tblVehicleEF	HHD	6.2960e-003	0.02
tblVehicleEF	HHD	9.1000e-005	8.8000e-005
tblVehicleEF	HHD	8.0940e-003	0.01
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8400e-003	8.8360e-003
tblVehicleEF	HHD	6.0240e-003	0.02
tblVehicleEF	HHD	8.3000e-005	8.1000e-005
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tblVehicleEF	HHD	0.39	0.61
tblVehicleEF	HHD	1.1200e-004	1.2100e-004
tblVehicleEF	HHD	0.09	0.15
tblVehicleEF	HHD	3.6000e-004	4.2100e-004
tblVehicleEF	HHD	0.07	0.08
tblVehicleEF	HHD	0.04	0.05
tblVehicleEF	HHD	0.01	0.02
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tblVehicleEF	HHD	1.5600e-004	1.7000e-004
tblVehicleEF	HHD	4.6140e-003	4.9980e-003
tblVehicleEF	HHD	0.46	0.72
tblVehicleEF	HHD	1.1200e-004	1.2100e-004
tblVehicleEF	HHD	0.20	0.26
tblVehicleEF	HHD	3.6000e-004	4.2100e-004
tblVehicleEF	HHD	0.08	0.09
tblVehicleEF	HHD	0.52	0.70
tblVehicleEF	HHD	0.09	0.09
tblVehicleEF	HHD	0.07	0.09

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tblVehicleEF	HHD	1.06	1.16
tblVehicleEF	HHD	3.36	3.39
tblVehicleEF	HHD	4,099.40	4,343.58
tblVehicleEF	HHD	1,572.96	1,660.44
tblVehicleEF	HHD	10.75	10.55
tblVehicleEF	HHD	13.67	20.67
tblVehicleEF	HHD	2.09	4.13
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tblVehicleEF	HHD	0.06	0.06
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tblVehicleEF	HHD	6.2960e-003	0.02
tblVehicleEF	HHD	9.1000e-005	8.8000e-005
tblVehicleEF	HHD	0.01	0.02
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8400e-003	8.8360e-003
tblVehicleEF	HHD	6.0240e-003	0.02
tblVehicleEF	HHD	8.3000e-005	8.1000e-005
tblVehicleEF	HHD	1.0000e-004	1.1000e-004
tblVehicleEF	HHD	4.7840e-003	5.2380e-003
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tblVehicleEF	HHD	7.6000e-005	8.1000e-005
tblVehicleEF	HHD	0.09	0.15
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tblVehicleEF	HHD	0.04	0.04

tblVehicleEF	HHD	0.01	0.02
tblVehicleEF	HHD	1.6300e-004	1.6100e-004
tblVehicleEF	HHD	1.0000e-004	1.1000e-004
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tblVehicleEF	HHD	7.6000e-005	8.1000e-005
tblVehicleEF	HHD	0.20	0.26
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tblVehicleEF	LDA	0.06	0.08
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tblVehicleEF	LDA	2.0590e-003	2.1160e-003
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tblVehicleEF	LDA	0.10	0.11
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.04
tblVehicleEF	LDA	0.06	0.08

tblVehicleEF	LDA	2.6360e-003	2.8620e-003
tblVehicleEF	LDA	5.6700e-004	6.1400e-004
tblVehicleEF	LDA	0.04	0.04
tblVehicleEF	LDA	0.10	0.11
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.04
tblVehicleEF	LDA	0.07	0.09
tblVehicleEF	LDA	5.1340e-003	6.2800e-003
tblVehicleEF	LDA	4.2110e-003	5.4950e-003
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tblVehicleEF	LDA	54.94	59.19
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.06	0.07
tblVehicleEF	LDA	2.1170e-003	2.2290e-003
tblVehicleEF	LDA	2.2400e-003	2.3010e-003
tblVehicleEF	LDA	1.9520e-003	2.0560e-003
tblVehicleEF	LDA	2.0590e-003	2.1160e-003
tblVehicleEF	LDA	0.06	0.07
tblVehicleEF	LDA	0.10	0.11
tblVehicleEF	LDA	0.05	0.06
tblVehicleEF	LDA	0.01	0.02
tblVehicleEF	LDA	0.04	0.04
tblVehicleEF	LDA	0.06	0.07
tblVehicleEF	LDA	2.7590e-003	2.9960e-003

tblVehicleEF	LDA	5.6400e-004	6.1000e-004
tblVehicleEF	LDA	0.06	0.07
tblVehicleEF	LDA	0.10	0.11
tblVehicleEF	LDA	0.05	0.06
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.04
tblVehicleEF	LDA	0.06	0.08
tblVehicleEF	LDA	4.7330e-003	5.7950e-003
tblVehicleEF	LDA	4.8460e-003	6.3340e-003
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tblVehicleEF	LDA	1.08	1.31
tblVehicleEF	LDA	258.68	280.76
tblVehicleEF	LDA	54.94	59.19
tblVehicleEF	LDA	0.05	0.06
tblVehicleEF	LDA	0.06	0.08
tblVehicleEF	LDA	2.1170e-003	2.2290e-003
tblVehicleEF	LDA	2.2400e-003	2.3010e-003
tblVehicleEF	LDA	1.9520e-003	2.0560e-003
tblVehicleEF	LDA	2.0590e-003	2.1160e-003
tblVehicleEF	LDA	0.04	0.04
tblVehicleEF	LDA	0.10	0.12
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.07	0.09
tblVehicleEF	LDA	2.5910e-003	2.8130e-003
tblVehicleEF	LDA	5.6700e-004	6.1400e-004

tblVehicleEF	LDA	0.04	0.04
tblVehicleEF	LDA	0.10	0.12
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.07	0.09
tblVehicleEF	LDT1	0.01	0.02
tblVehicleEF	LDT1	0.01	0.02
tblVehicleEF	LDT1	1.52	1.84
tblVehicleEF	LDT1	2.49	3.09
tblVehicleEF	LDT1	330.49	351.43
tblVehicleEF	LDT1	67.47	71.32
tblVehicleEF	LDT1	0.14	0.17
tblVehicleEF	LDT1	0.14	0.18
tblVehicleEF	LDT1	3.3520e-003	3.7390e-003
tblVehicleEF	LDT1	3.2790e-003	3.5990e-003
tblVehicleEF	LDT1	3.0870e-003	3.4440e-003
tblVehicleEF	LDT1	3.0150e-003	3.3100e-003
tblVehicleEF	LDT1	0.12	0.14
tblVehicleEF	LDT1	0.25	0.28
tblVehicleEF	LDT1	0.10	0.11
tblVehicleEF	LDT1	0.03	0.04
tblVehicleEF	LDT1	0.16	0.18
tblVehicleEF	LDT1	0.17	0.21
tblVehicleEF	LDT1	3.3240e-003	3.5380e-003
tblVehicleEF	LDT1	7.1800e-004	7.6700e-004
tblVehicleEF	LDT1	0.12	0.14

tblVehicleEF	LDT1	0.25	0.28
tblVehicleEF	LDT1	0.10	0.11
tblVehicleEF	LDT1	0.05	0.06
tblVehicleEF	LDT1	0.16	0.18
tblVehicleEF	LDT1	0.18	0.24
tblVehicleEF	LDT1	0.01	0.02
tblVehicleEF	LDT1	0.01	0.01
tblVehicleEF	LDT1	1.65	1.99
tblVehicleEF	LDT1	2.11	2.62
tblVehicleEF	LDT1	344.92	366.73
tblVehicleEF	LDT1	67.47	71.32
tblVehicleEF	LDT1	0.12	0.15
tblVehicleEF	LDT1	0.13	0.16
tblVehicleEF	LDT1	3.3520e-003	3.7390e-003
tblVehicleEF	LDT1	3.2790e-003	3.5990e-003
tblVehicleEF	LDT1	3.0870e-003	3.4440e-003
tblVehicleEF	LDT1	3.0150e-003	3.3100e-003
tblVehicleEF	LDT1	0.19	0.21
tblVehicleEF	LDT1	0.26	0.30
tblVehicleEF	LDT1	0.14	0.16
tblVehicleEF	LDT1	0.04	0.05
tblVehicleEF	LDT1	0.15	0.17
tblVehicleEF	LDT1	0.15	0.19
tblVehicleEF	LDT1	3.4700e-003	3.6940e-003
tblVehicleEF	LDT1	7.1200e-004	7.5900e-004
tblVehicleEF	LDT1	0.19	0.21
tblVehicleEF	LDT1	0.26	0.30

tblVehicleEF	LDT1	0.14	0.16
tblVehicleEF	LDT1	0.05	0.07
tblVehicleEF	LDT1	0.15	0.17
tblVehicleEF	LDT1	0.16	0.21
tblVehicleEF	LDT1	0.01	0.02
tblVehicleEF	LDT1	0.01	0.02
tblVehicleEF	LDT1	1.47	1.79
tblVehicleEF	LDT1	2.57	3.19
tblVehicleEF	LDT1	325.20	345.81
tblVehicleEF	LDT1	67.47	71.32
tblVehicleEF	LDT1	0.14	0.17
tblVehicleEF	LDT1	0.15	0.18
tblVehicleEF	LDT1	3.3520e-003	3.7390e-003
tblVehicleEF	LDT1	3.2790e-003	3.5990e-003
tblVehicleEF	LDT1	3.0870e-003	3.4440e-003
tblVehicleEF	LDT1	3.0150e-003	3.3100e-003
tblVehicleEF	LDT1	0.12	0.14
tblVehicleEF	LDT1	0.28	0.32
tblVehicleEF	LDT1	0.10	0.11
tblVehicleEF	LDT1	0.03	0.04
tblVehicleEF	LDT1	0.19	0.21
tblVehicleEF	LDT1	0.17	0.22
tblVehicleEF	LDT1	3.2700e-003	3.4810e-003
tblVehicleEF	LDT1	7.1900e-004	7.6900e-004
tblVehicleEF	LDT1	0.12	0.14
tblVehicleEF	LDT1	0.28	0.32
tblVehicleEF	LDT1	0.10	0.11

tblVehicleEF	LDT1	0.05	0.06
tblVehicleEF	LDT1	0.19	0.21
tblVehicleEF	LDT1	0.19	0.24
tblVehicleEF	LDT2	6.6130e-003	7.8740e-003
tblVehicleEF	LDT2	5.6850e-003	7.2440e-003
tblVehicleEF	LDT2	0.79	0.90
tblVehicleEF	LDT2	1.23	1.49
tblVehicleEF	LDT2	368.32	395.42
tblVehicleEF	LDT2	75.43	80.68
tblVehicleEF	LDT2	0.07	0.09
tblVehicleEF	LDT2	0.09	0.12
tblVehicleEF	LDT2	2.1490e-003	2.1620e-003
tblVehicleEF	LDT2	2.3760e-003	2.3490e-003
tblVehicleEF	LDT2	1.9770e-003	1.9880e-003
tblVehicleEF	LDT2	2.1840e-003	2.1600e-003
tblVehicleEF	LDT2	0.04	0.05
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	0.04	0.05
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.08	0.10
tblVehicleEF	LDT2	3.6890e-003	3.9620e-003
tblVehicleEF	LDT2	7.7500e-004	8.3200e-004
tblVehicleEF	LDT2	0.04	0.05
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	0.04	0.05
tblVehicleEF	LDT2	0.02	0.03

tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.08	0.11
tblVehicleEF	LDT2	7.0150e-003	8.3450e-003
tblVehicleEF	LDT2	5.0630e-003	6.4440e-003
tblVehicleEF	LDT2	0.87	0.99
tblVehicleEF	LDT2	1.06	1.27
tblVehicleEF	LDT2	384.82	413.17
tblVehicleEF	LDT2	75.43	80.68
tblVehicleEF	LDT2	0.06	0.08
tblVehicleEF	LDT2	0.09	0.11
tblVehicleEF	LDT2	2.1490e-003	2.1620e-003
tblVehicleEF	LDT2	2.3760e-003	2.3490e-003
tblVehicleEF	LDT2	1.9770e-003	1.9880e-003
tblVehicleEF	LDT2	2.1840e-003	2.1600e-003
tblVehicleEF	LDT2	0.07	0.07
tblVehicleEF	LDT2	0.10	0.11
tblVehicleEF	LDT2	0.06	0.07
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.07	0.09
tblVehicleEF	LDT2	3.8550e-003	4.1400e-003
tblVehicleEF	LDT2	7.7200e-004	8.2800e-004
tblVehicleEF	LDT2	0.07	0.07
tblVehicleEF	LDT2	0.10	0.11
tblVehicleEF	LDT2	0.06	0.07
tblVehicleEF	LDT2	0.03	0.03
tblVehicleEF	LDT2	0.06	0.06

tblVehicleEF	LDT2	0.07	0.10
tblVehicleEF	LDT2	6.4820e-003	7.7190e-003
tblVehicleEF	LDT2	5.8190e-003	7.4150e-003
tblVehicleEF	LDT2	0.76	0.87
tblVehicleEF	LDT2	1.27	1.54
tblVehicleEF	LDT2	362.26	388.90
tblVehicleEF	LDT2	75.43	80.68
tblVehicleEF	LDT2	0.07	0.09
tblVehicleEF	LDT2	0.09	0.12
tblVehicleEF	LDT2	2.1490e-003	2.1620e-003
tblVehicleEF	LDT2	2.3760e-003	2.3490e-003
tblVehicleEF	LDT2	1.9770e-003	1.9880e-003
tblVehicleEF	LDT2	2.1840e-003	2.1600e-003
tblVehicleEF	LDT2	0.04	0.05
tblVehicleEF	LDT2	0.10	0.12
tblVehicleEF	LDT2	0.04	0.04
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.07
tblVehicleEF	LDT2	0.08	0.10
tblVehicleEF	LDT2	3.6280e-003	3.8960e-003
tblVehicleEF	LDT2	7.7500e-004	8.3300e-004
tblVehicleEF	LDT2	0.04	0.05
tblVehicleEF	LDT2	0.10	0.12
tblVehicleEF	LDT2	0.04	0.04
tblVehicleEF	LDT2	0.02	0.03
tblVehicleEF	LDT2	0.07	0.07
tblVehicleEF	LDT2	0.09	0.11

tblVehicleEF	LHD1	5.2860e-003	6.0120e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.16
tblVehicleEF	LHD1	0.75	0.94
tblVehicleEF	LHD1	2.58	3.04
tblVehicleEF	LHD1	8.94	8.91
tblVehicleEF	LHD1	595.21	612.93
tblVehicleEF	LHD1	32.17	34.52
tblVehicleEF	LHD1	0.07	0.07
tblVehicleEF	LHD1	0.86	1.05
tblVehicleEF	LHD1	0.95	1.07
tblVehicleEF	LHD1	8.3300e-004	8.1600e-004
tblVehicleEF	LHD1	0.01	9.9780e-003
tblVehicleEF	LHD1	8.8370e-003	9.4020e-003
tblVehicleEF	LHD1	9.4800e-004	1.0850e-003
tblVehicleEF	LHD1	7.9700e-004	7.8100e-004
tblVehicleEF	LHD1	2.5350e-003	2.4950e-003
tblVehicleEF	LHD1	8.4300e-003	8.9670e-003
tblVehicleEF	LHD1	8.7200e-004	9.9800e-004
tblVehicleEF	LHD1	2.9730e-003	3.3130e-003
tblVehicleEF	LHD1	0.10	0.11
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.8290e-003	1.9910e-003
tblVehicleEF	LHD1	0.06	0.07
tblVehicleEF	LHD1	0.30	0.32
tblVehicleEF	LHD1	0.24	0.29

tblVehicleEF	LHD1	5.8400e-003	6.0260e-003
tblVehicleEF	LHD1	3.7000e-004	4.0200e-004
tblVehicleEF	LHD1	2.9730e-003	3.3130e-003
tblVehicleEF	LHD1	0.10	0.11
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8290e-003	1.9910e-003
tblVehicleEF	LHD1	0.07	0.09
tblVehicleEF	LHD1	0.30	0.32
tblVehicleEF	LHD1	0.27	0.32
tblVehicleEF	LHD1	5.2860e-003	6.0120e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.16
tblVehicleEF	LHD1	0.76	0.96
tblVehicleEF	LHD1	2.46	2.90
tblVehicleEF	LHD1	8.94	8.91
tblVehicleEF	LHD1	595.21	612.93
tblVehicleEF	LHD1	32.17	34.52
tblVehicleEF	LHD1	0.07	0.07
tblVehicleEF	LHD1	0.81	0.98
tblVehicleEF	LHD1	0.91	1.03
tblVehicleEF	LHD1	8.3300e-004	8.1600e-004
tblVehicleEF	LHD1	0.01	9.9780e-003
tblVehicleEF	LHD1	8.8370e-003	9.4020e-003
tblVehicleEF	LHD1	9.4800e-004	1.0850e-003
tblVehicleEF	LHD1	7.9700e-004	7.8100e-004
tblVehicleEF	LHD1	2.5350e-003	2.4950e-003

tblVehicleEF	LHD1	8.4300e-003	8.9670e-003
tblVehicleEF	LHD1	8.7200e-004	9.9800e-004
tblVehicleEF	LHD1	4.4450e-003	4.9680e-003
tblVehicleEF	LHD1	0.10	0.11
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	2.5600e-003	2.8120e-003
tblVehicleEF	LHD1	0.06	0.07
tblVehicleEF	LHD1	0.29	0.31
tblVehicleEF	LHD1	0.23	0.28
tblVehicleEF	LHD1	5.8400e-003	6.0270e-003
tblVehicleEF	LHD1	3.6700e-004	3.9900e-004
tblVehicleEF	LHD1	4.4450e-003	4.9680e-003
tblVehicleEF	LHD1	0.10	0.11
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	2.5600e-003	2.8120e-003
tblVehicleEF	LHD1	0.08	0.09
tblVehicleEF	LHD1	0.29	0.31
tblVehicleEF	LHD1	0.26	0.31
tblVehicleEF	LHD1	5.2860e-003	6.0120e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.16
tblVehicleEF	LHD1	0.74	0.94
tblVehicleEF	LHD1	2.59	3.06
tblVehicleEF	LHD1	8.94	8.91
tblVehicleEF	LHD1	595.21	612.93
tblVehicleEF	LHD1	32.17	34.52

tblVehicleEF	LHD1	0.07	0.07
tblVehicleEF	LHD1	0.85	1.03
tblVehicleEF	LHD1	0.95	1.08
tblVehicleEF	LHD1	8.3300e-004	8.1600e-004
tblVehicleEF	LHD1	0.01	9.9780e-003
tblVehicleEF	LHD1	8.8370e-003	9.4020e-003
tblVehicleEF	LHD1	9.4800e-004	1.0850e-003
tblVehicleEF	LHD1	7.9700e-004	7.8100e-004
tblVehicleEF	LHD1	2.5350e-003	2.4950e-003
tblVehicleEF	LHD1	8.4300e-003	8.9670e-003
tblVehicleEF	LHD1	8.7200e-004	9.9800e-004
tblVehicleEF	LHD1	3.1110e-003	3.5020e-003
tblVehicleEF	LHD1	0.11	0.12
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.7990e-003	1.9650e-003
tblVehicleEF	LHD1	0.06	0.07
tblVehicleEF	LHD1	0.32	0.34
tblVehicleEF	LHD1	0.25	0.30
tblVehicleEF	LHD1	5.8400e-003	6.0260e-003
tblVehicleEF	LHD1	3.7000e-004	4.0200e-004
tblVehicleEF	LHD1	3.1110e-003	3.5020e-003
tblVehicleEF	LHD1	0.11	0.12
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.7990e-003	1.9650e-003
tblVehicleEF	LHD1	0.07	0.09
tblVehicleEF	LHD1	0.32	0.34
tblVehicleEF	LHD1	0.27	0.32

tblVehicleEF	LHD2	3.7460e-003	4.3410e-003
tblVehicleEF	LHD2	3.7700e-003	5.0230e-003
tblVehicleEF	LHD2	7.4580e-003	9.9030e-003
tblVehicleEF	LHD2	0.13	0.13
tblVehicleEF	LHD2	0.31	0.39
tblVehicleEF	LHD2	1.26	1.51
tblVehicleEF	LHD2	13.57	13.55
tblVehicleEF	LHD2	610.80	625.73
tblVehicleEF	LHD2	26.97	28.89
tblVehicleEF	LHD2	0.09	0.10
tblVehicleEF	LHD2	0.55	0.76
tblVehicleEF	LHD2	0.50	0.61
tblVehicleEF	LHD2	1.1440e-003	1.1760e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	8.4330e-003	9.3050e-003
tblVehicleEF	LHD2	4.4100e-004	5.0600e-004
tblVehicleEF	LHD2	1.0950e-003	1.1250e-003
tblVehicleEF	LHD2	2.6630e-003	2.6430e-003
tblVehicleEF	LHD2	8.0540e-003	8.8870e-003
tblVehicleEF	LHD2	4.0500e-004	4.6500e-004
tblVehicleEF	LHD2	1.0290e-003	1.2670e-003
tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	6.8900e-004	8.0900e-004
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.07	0.10
tblVehicleEF	LHD2	0.10	0.13

tblVehicleEF	LHD2	5.9490e-003	6.1010e-003
tblVehicleEF	LHD2	2.9200e-004	3.1600e-004
tblVehicleEF	LHD2	1.0290e-003	1.2670e-003
tblVehicleEF	LHD2	0.03	0.04
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	6.8900e-004	8.0900e-004
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.07	0.10
tblVehicleEF	LHD2	0.11	0.15
tblVehicleEF	LHD2	3.7460e-003	4.3410e-003
tblVehicleEF	LHD2	3.8180e-003	5.0980e-003
tblVehicleEF	LHD2	7.2080e-003	9.5540e-003
tblVehicleEF	LHD2	0.13	0.13
tblVehicleEF	LHD2	0.31	0.40
tblVehicleEF	LHD2	1.20	1.44
tblVehicleEF	LHD2	13.57	13.55
tblVehicleEF	LHD2	610.80	625.73
tblVehicleEF	LHD2	26.97	28.89
tblVehicleEF	LHD2	0.09	0.10
tblVehicleEF	LHD2	0.52	0.72
tblVehicleEF	LHD2	0.49	0.58
tblVehicleEF	LHD2	1.1440e-003	1.1760e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	8.4330e-003	9.3050e-003
tblVehicleEF	LHD2	4.4100e-004	5.0600e-004
tblVehicleEF	LHD2	1.0950e-003	1.1250e-003
tblVehicleEF	LHD2	2.6630e-003	2.6430e-003

tblVehicleEF	LHD2	8.0540e-003	8.8870e-003
tblVehicleEF	LHD2	4.0500e-004	4.6500e-004
tblVehicleEF	LHD2	1.5320e-003	1.8880e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	9.5700e-004	1.1340e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.07	0.09
tblVehicleEF	LHD2	0.10	0.13
tblVehicleEF	LHD2	5.9490e-003	6.1010e-003
tblVehicleEF	LHD2	2.9100e-004	3.1500e-004
tblVehicleEF	LHD2	1.5320e-003	1.8880e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	9.5700e-004	1.1340e-003
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.07	0.09
tblVehicleEF	LHD2	0.11	0.14
tblVehicleEF	LHD2	3.7460e-003	4.3410e-003
tblVehicleEF	LHD2	3.7580e-003	5.0030e-003
tblVehicleEF	LHD2	7.5080e-003	9.9730e-003
tblVehicleEF	LHD2	0.13	0.13
tblVehicleEF	LHD2	0.31	0.39
tblVehicleEF	LHD2	1.27	1.52
tblVehicleEF	LHD2	13.57	13.55
tblVehicleEF	LHD2	610.80	625.73
tblVehicleEF	LHD2	26.97	28.89

tblVehicleEF	LHD2	0.09	0.10
tblVehicleEF	LHD2	0.54	0.75
tblVehicleEF	LHD2	0.51	0.61
tblVehicleEF	LHD2	1.1440e-003	1.1760e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	8.4330e-003	9.3050e-003
tblVehicleEF	LHD2	4.4100e-004	5.0600e-004
tblVehicleEF	LHD2	1.0950e-003	1.1250e-003
tblVehicleEF	LHD2	2.6630e-003	2.6430e-003
tblVehicleEF	LHD2	8.0540e-003	8.8870e-003
tblVehicleEF	LHD2	4.0500e-004	4.6500e-004
tblVehicleEF	LHD2	1.0410e-003	1.3050e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	6.6600e-004	7.8800e-004
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.08	0.10
tblVehicleEF	LHD2	0.10	0.13
tblVehicleEF	LHD2	5.9490e-003	6.1010e-003
tblVehicleEF	LHD2	2.9200e-004	3.1700e-004
tblVehicleEF	LHD2	1.0410e-003	1.3050e-003
tblVehicleEF	LHD2	0.04	0.05
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	6.6600e-004	7.8800e-004
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.08	0.10
tblVehicleEF	LHD2	0.11	0.15

tblVehicleEF	MCY	0.54	0.53
tblVehicleEF	MCY	0.15	0.15
tblVehicleEF	MCY	18.72	19.20
tblVehicleEF	MCY	9.68	9.64
tblVehicleEF	MCY	189.29	188.47
tblVehicleEF	MCY	44.13	44.88
tblVehicleEF	MCY	1.13	1.13
tblVehicleEF	MCY	0.31	0.31
tblVehicleEF	MCY	2.4730e-003	2.3830e-003
tblVehicleEF	MCY	3.6800e-003	3.9570e-003
tblVehicleEF	MCY	2.3100e-003	2.2280e-003
tblVehicleEF	MCY	3.4590e-003	3.7290e-003
tblVehicleEF	MCY	1.06	1.07
tblVehicleEF	MCY	0.62	0.65
tblVehicleEF	MCY	0.64	0.65
tblVehicleEF	MCY	2.58	2.61
tblVehicleEF	MCY	0.58	0.62
tblVehicleEF	MCY	2.04	2.06
tblVehicleEF	MCY	6.5900e-004	6.6700e-004
tblVehicleEF	MCY	1.06	1.07
tblVehicleEF	MCY	0.62	0.65
tblVehicleEF	MCY	0.64	0.65
tblVehicleEF	MCY	3.22	3.25
tblVehicleEF	MCY	0.58	0.62
tblVehicleEF	MCY	2.22	2.24
tblVehicleEF	MCY	0.53	0.52
tblVehicleEF	MCY	0.13	0.13

tblVehicleEF	MCY	18.05	18.48
tblVehicleEF	MCY	8.84	8.82
tblVehicleEF	MCY	189.29	188.47
tblVehicleEF	MCY	44.13	44.88
tblVehicleEF	MCY	0.99	0.99
tblVehicleEF	MCY	0.29	0.29
tblVehicleEF	MCY	2.4730e-003	2.3830e-003
tblVehicleEF	MCY	3.6800e-003	3.9570e-003
tblVehicleEF	MCY	2.3100e-003	2.2280e-003
tblVehicleEF	MCY	3.4590e-003	3.7290e-003
tblVehicleEF	MCY	1.72	1.73
tblVehicleEF	MCY	0.68	0.71
tblVehicleEF	MCY	1.06	1.08
tblVehicleEF	MCY	2.52	2.55
tblVehicleEF	MCY	0.54	0.58
tblVehicleEF	MCY	1.82	1.84
tblVehicleEF	MCY	2.2650e-003	2.2640e-003
tblVehicleEF	MCY	6.3900e-004	6.4700e-004
tblVehicleEF	MCY	1.72	1.73
tblVehicleEF	MCY	0.68	0.71
tblVehicleEF	MCY	1.06	1.08
tblVehicleEF	MCY	3.15	3.17
tblVehicleEF	MCY	0.54	0.58
tblVehicleEF	MCY	1.98	2.00
tblVehicleEF	MCY	0.54	0.54
tblVehicleEF	MCY	0.15	0.15
tblVehicleEF	MCY	18.82	19.30

tblVehicleEF	MCY	9.83	9.78
tblVehicleEF	MCY	189.29	188.47
tblVehicleEF	MCY	44.13	44.88
tblVehicleEF	MCY	1.10	1.11
tblVehicleEF	MCY	0.31	0.31
tblVehicleEF	MCY	2.4730e-003	2.3830e-003
tblVehicleEF	MCY	3.6800e-003	3.9570e-003
tblVehicleEF	MCY	2.3100e-003	2.2280e-003
tblVehicleEF	MCY	3.4590e-003	3.7290e-003
tblVehicleEF	MCY	1.15	1.16
tblVehicleEF	MCY	0.80	0.84
tblVehicleEF	MCY	0.61	0.62
tblVehicleEF	MCY	2.59	2.62
tblVehicleEF	MCY	0.67	0.71
tblVehicleEF	MCY	2.08	2.10
tblVehicleEF	MCY	6.6300e-004	6.7100e-004
tblVehicleEF	MCY	1.15	1.16
tblVehicleEF	MCY	0.80	0.84
tblVehicleEF	MCY	0.61	0.62
tblVehicleEF	MCY	3.23	3.26
tblVehicleEF	MCY	0.67	0.71
tblVehicleEF	MCY	2.26	2.29
tblVehicleEF	MDV	0.01	0.02
tblVehicleEF	MDV	0.01	0.02
tblVehicleEF	MDV	1.21	1.56
tblVehicleEF	MDV	2.22	2.79
tblVehicleEF	MDV	495.22	528.65

tblVehicleEF	MDV	99.91	106.35
tblVehicleEF	MDV	0.13	0.17
tblVehicleEF	MDV	0.19	0.25
tblVehicleEF	MDV	2.2990e-003	2.4280e-003
tblVehicleEF	MDV	2.4650e-003	2.5830e-003
tblVehicleEF	MDV	2.1190e-003	2.2400e-003
tblVehicleEF	MDV	2.2660e-003	2.3780e-003
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.15	0.16
tblVehicleEF	MDV	0.07	0.07
tblVehicleEF	MDV	0.03	0.04
tblVehicleEF	MDV	0.09	0.09
tblVehicleEF	MDV	0.17	0.22
tblVehicleEF	MDV	4.9590e-003	5.2990e-003
tblVehicleEF	MDV	1.0380e-003	1.1130e-003
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.15	0.16
tblVehicleEF	MDV	0.07	0.07
tblVehicleEF	MDV	0.04	0.06
tblVehicleEF	MDV	0.09	0.09
tblVehicleEF	MDV	0.18	0.24
tblVehicleEF	MDV	0.01	0.02
tblVehicleEF	MDV	0.01	0.01
tblVehicleEF	MDV	1.32	1.69
tblVehicleEF	MDV	1.90	2.39
tblVehicleEF	MDV	516.89	551.85
tblVehicleEF	MDV	99.91	106.35

tblVehicleEF	MDV	0.11	0.15
tblVehicleEF	MDV	0.18	0.23
tblVehicleEF	MDV	2.2990e-003	2.4280e-003
tblVehicleEF	MDV	2.4650e-003	2.5830e-003
tblVehicleEF	MDV	2.1190e-003	2.2400e-003
tblVehicleEF	MDV	2.2660e-003	2.3780e-003
tblVehicleEF	MDV	0.10	0.11
tblVehicleEF	MDV	0.15	0.17
tblVehicleEF	MDV	0.09	0.10
tblVehicleEF	MDV	0.03	0.05
tblVehicleEF	MDV	0.08	0.08
tblVehicleEF	MDV	0.15	0.19
tblVehicleEF	MDV	5.1770e-003	5.5330e-003
tblVehicleEF	MDV	1.0320e-003	1.1050e-003
tblVehicleEF	MDV	0.10	0.11
tblVehicleEF	MDV	0.15	0.17
tblVehicleEF	MDV	0.09	0.10
tblVehicleEF	MDV	0.05	0.06
tblVehicleEF	MDV	0.08	0.08
tblVehicleEF	MDV	0.16	0.21
tblVehicleEF	MDV	0.01	0.01
tblVehicleEF	MDV	0.01	0.02
tblVehicleEF	MDV	1.17	1.52
tblVehicleEF	MDV	2.29	2.88
tblVehicleEF	MDV	487.26	520.14
tblVehicleEF	MDV	99.91	106.35
tblVehicleEF	MDV	0.13	0.17

tblVehicleEF	MDV	0.20	0.26
tblVehicleEF	MDV	2.2990e-003	2.4280e-003
tblVehicleEF	MDV	2.4650e-003	2.5830e-003
tblVehicleEF	MDV	2.1190e-003	2.2400e-003
tblVehicleEF	MDV	2.2660e-003	2.3780e-003
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.16	0.17
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.03	0.04
tblVehicleEF	MDV	0.10	0.11
tblVehicleEF	MDV	0.17	0.22
tblVehicleEF	MDV	4.8790e-003	5.2130e-003
tblVehicleEF	MDV	1.0390e-003	1.1140e-003
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.16	0.17
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.04	0.06
tblVehicleEF	MDV	0.10	0.11
tblVehicleEF	MDV	0.19	0.24
tblVehicleEF	MH	0.02	0.04
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	1.76	2.77
tblVehicleEF	MH	5.23	6.41
tblVehicleEF	MH	1,125.05	1,135.33
tblVehicleEF	MH	59.88	61.01
tblVehicleEF	MH	1.00	1.17
tblVehicleEF	MH	0.75	0.85

tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.0430e-003	1.2190e-003
tblVehicleEF	MH	3.2050e-003	3.1990e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	9.5900e-004	1.1210e-003
tblVehicleEF	MH	0.84	1.07
tblVehicleEF	MH	0.06	0.08
tblVehicleEF	MH	0.36	0.45
tblVehicleEF	MH	0.07	0.10
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	0.30	0.36
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.9000e-004	7.2200e-004
tblVehicleEF	MH	0.84	1.07
tblVehicleEF	MH	0.06	0.08
tblVehicleEF	MH	0.36	0.45
tblVehicleEF	MH	0.10	0.14
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	0.33	0.40
tblVehicleEF	MH	0.02	0.04
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	1.81	2.85
tblVehicleEF	MH	4.92	6.02
tblVehicleEF	MH	1,125.05	1,135.33
tblVehicleEF	MH	59.88	61.01
tblVehicleEF	MH	0.92	1.07

tblVehicleEF	MH	0.71	0.82
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.0430e-003	1.2190e-003
tblVehicleEF	MH	3.2050e-003	3.1990e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	9.5900e-004	1.1210e-003
tblVehicleEF	MH	1.24	1.58
tblVehicleEF	MH	0.06	0.08
tblVehicleEF	MH	0.51	0.65
tblVehicleEF	MH	0.07	0.11
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	0.29	0.35
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.8400e-004	7.1500e-004
tblVehicleEF	MH	1.24	1.58
tblVehicleEF	MH	0.06	0.08
tblVehicleEF	MH	0.51	0.65
tblVehicleEF	MH	0.10	0.15
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	0.31	0.38
tblVehicleEF	MH	0.02	0.04
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	1.75	2.74
tblVehicleEF	MH	5.28	6.46
tblVehicleEF	MH	1,125.05	1,135.33
tblVehicleEF	MH	59.88	61.01

tblVehicleEF	MH	0.98	1.15
tblVehicleEF	MH	0.75	0.86
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.0430e-003	1.2190e-003
tblVehicleEF	MH	3.2050e-003	3.1990e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	9.5900e-004	1.1210e-003
tblVehicleEF	MH	0.95	1.21
tblVehicleEF	MH	0.07	0.09
tblVehicleEF	MH	0.37	0.46
tblVehicleEF	MH	0.07	0.10
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	0.30	0.37
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	6.9000e-004	7.2200e-004
tblVehicleEF	MH	0.95	1.21
tblVehicleEF	MH	0.07	0.09
tblVehicleEF	MH	0.37	0.46
tblVehicleEF	MH	0.10	0.14
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	0.33	0.40
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	3.8910e-003	5.7010e-003
tblVehicleEF	MHD	0.05	0.05
tblVehicleEF	MHD	0.36	0.39
tblVehicleEF	MHD	0.32	0.42

tblVehicleEF	MHD	5.63	6.85
tblVehicleEF	MHD	130.55	131.02
tblVehicleEF	MHD	1,141.08	1,155.79
tblVehicleEF	MHD	62.84	65.08
tblVehicleEF	MHD	0.35	0.52
tblVehicleEF	MHD	0.76	1.23
tblVehicleEF	MHD	9.98	9.82
tblVehicleEF	MHD	1.0200e-004	2.8600e-004
tblVehicleEF	MHD	2.8420e-003	5.6410e-003
tblVehicleEF	MHD	8.1400e-004	8.9100e-004
tblVehicleEF	MHD	9.7000e-005	2.7300e-004
tblVehicleEF	MHD	2.7140e-003	5.3920e-003
tblVehicleEF	MHD	7.4900e-004	8.1900e-004
tblVehicleEF	MHD	1.0540e-003	1.2390e-003
tblVehicleEF	MHD	0.04	0.05
tblVehicleEF	MHD	0.02	0.03
tblVehicleEF	MHD	7.0500e-004	7.9100e-004
tblVehicleEF	MHD	0.04	0.05
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.34	0.42
tblVehicleEF	MHD	1.2580e-003	1.2630e-003
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.2700e-004	7.7100e-004
tblVehicleEF	MHD	1.0540e-003	1.2390e-003
tblVehicleEF	MHD	0.04	0.05
tblVehicleEF	MHD	0.04	0.04
tblVehicleEF	MHD	7.0500e-004	7.9100e-004

tblVehicleEF	MHD	0.04	0.06
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.38	0.46
tblVehicleEF	MHD	0.01	0.02
tblVehicleEF	MHD	3.9490e-003	5.7940e-003
tblVehicleEF	MHD	0.04	0.05
tblVehicleEF	MHD	0.26	0.28
tblVehicleEF	MHD	0.32	0.43
tblVehicleEF	MHD	5.34	6.50
tblVehicleEF	MHD	138.27	138.77
tblVehicleEF	MHD	1,141.08	1,155.79
tblVehicleEF	MHD	62.84	65.08
tblVehicleEF	MHD	0.36	0.53
tblVehicleEF	MHD	0.71	1.16
tblVehicleEF	MHD	9.94	9.78
tblVehicleEF	MHD	8.6000e-005	2.4100e-004
tblVehicleEF	MHD	2.8420e-003	5.6410e-003
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tblVehicleEF	MHD	8.2000e-005	2.3000e-004
tblVehicleEF	MHD	2.7140e-003	5.3920e-003
tblVehicleEF	MHD	7.4900e-004	8.1900e-004
tblVehicleEF	MHD	1.5770e-003	1.8580e-003
tblVehicleEF	MHD	0.05	0.05
tblVehicleEF	MHD	0.02	0.03
tblVehicleEF	MHD	9.9000e-004	1.1240e-003
tblVehicleEF	MHD	0.04	0.05
tblVehicleEF	MHD	0.02	0.02

tblVehicleEF	MHD	0.33	0.40
tblVehicleEF	MHD	1.3310e-003	1.3360e-003
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.2200e-004	7.6500e-004
tblVehicleEF	MHD	1.5770e-003	1.8580e-003
tblVehicleEF	MHD	0.05	0.05
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tblVehicleEF	MHD	9.9000e-004	1.1240e-003
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tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	0.36	0.44
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	3.8750e-003	5.6760e-003
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tblVehicleEF	MHD	0.50	0.53
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tblVehicleEF	MHD	1,141.08	1,155.79
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tblVehicleEF	MHD	0.74	1.21
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tblVehicleEF	MHD	1.2400e-004	3.4800e-004
tblVehicleEF	MHD	2.8420e-003	5.6410e-003
tblVehicleEF	MHD	8.1400e-004	8.9100e-004
tblVehicleEF	MHD	1.1800e-004	3.3300e-004

tblVehicleEF	MHD	2.7140e-003	5.3920e-003
tblVehicleEF	MHD	7.4900e-004	8.1900e-004
tblVehicleEF	MHD	1.0750e-003	1.2900e-003
tblVehicleEF	MHD	0.05	0.05
tblVehicleEF	MHD	0.03	0.03
tblVehicleEF	MHD	6.8500e-004	7.7500e-004
tblVehicleEF	MHD	0.04	0.05
tblVehicleEF	MHD	0.02	0.03
tblVehicleEF	MHD	0.35	0.42
tblVehicleEF	MHD	1.1580e-003	1.1630e-003
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.2800e-004	7.7200e-004
tblVehicleEF	MHD	1.0750e-003	1.2900e-003
tblVehicleEF	MHD	0.05	0.05
tblVehicleEF	MHD	0.04	0.04
tblVehicleEF	MHD	6.8500e-004	7.7500e-004
tblVehicleEF	MHD	0.04	0.06
tblVehicleEF	MHD	0.02	0.03
tblVehicleEF	MHD	0.38	0.46
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	6.0280e-003	8.8720e-003
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.25	0.29
tblVehicleEF	OBUS	0.45	0.60
tblVehicleEF	OBUS	5.18	5.75
tblVehicleEF	OBUS	101.82	111.80
tblVehicleEF	OBUS	1,246.68	1,266.65

tblVehicleEF	OBUS	67.80	68.32
tblVehicleEF	OBUS	0.22	0.58
tblVehicleEF	OBUS	0.69	1.73
tblVehicleEF	OBUS	2.52	2.63
tblVehicleEF	OBUS	2.0000e-005	2.0400e-004
tblVehicleEF	OBUS	2.6330e-003	8.7020e-003
tblVehicleEF	OBUS	8.2900e-004	7.8900e-004
tblVehicleEF	OBUS	1.9000e-005	1.9500e-004
tblVehicleEF	OBUS	2.5030e-003	8.3100e-003
tblVehicleEF	OBUS	7.6200e-004	7.2500e-004
tblVehicleEF	OBUS	1.4160e-003	1.4710e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.03	0.04
tblVehicleEF	OBUS	7.6700e-004	7.7800e-004
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	0.04	0.04
tblVehicleEF	OBUS	0.32	0.36
tblVehicleEF	OBUS	9.8300e-004	1.0790e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.6900e-004	7.8400e-004
tblVehicleEF	OBUS	1.4160e-003	1.4710e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.05	0.06
tblVehicleEF	OBUS	7.6700e-004	7.7800e-004
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	0.04	0.04
tblVehicleEF	OBUS	0.35	0.39

tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	6.1370e-003	9.0250e-003
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.24	0.27
tblVehicleEF	OBUS	0.45	0.61
tblVehicleEF	OBUS	4.89	5.43
tblVehicleEF	OBUS	106.89	117.45
tblVehicleEF	OBUS	1,246.68	1,266.65
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tblVehicleEF	OBUS	0.64	1.63
tblVehicleEF	OBUS	2.49	2.59
tblVehicleEF	OBUS	1.7000e-005	1.7200e-004
tblVehicleEF	OBUS	2.6330e-003	8.7020e-003
tblVehicleEF	OBUS	8.2900e-004	7.8900e-004
tblVehicleEF	OBUS	1.6000e-005	1.6400e-004
tblVehicleEF	OBUS	2.5030e-003	8.3100e-003
tblVehicleEF	OBUS	7.6200e-004	7.2500e-004
tblVehicleEF	OBUS	2.0710e-003	2.1550e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.03	0.04
tblVehicleEF	OBUS	1.0770e-003	1.1010e-003
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	0.04	0.04
tblVehicleEF	OBUS	0.31	0.35
tblVehicleEF	OBUS	1.0320e-003	1.1330e-003
tblVehicleEF	OBUS	0.01	0.01

tblVehicleEF	OBUS	7.6400e-004	7.7900e-004
tblVehicleEF	OBUS	2.0710e-003	2.1550e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.05	0.05
tblVehicleEF	OBUS	1.0770e-003	1.1010e-003
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	0.04	0.04
tblVehicleEF	OBUS	0.34	0.38
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	5.9990e-003	8.8310e-003
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.26	0.31
tblVehicleEF	OBUS	0.45	0.60
tblVehicleEF	OBUS	5.23	5.81
tblVehicleEF	OBUS	94.83	104.00
tblVehicleEF	OBUS	1,246.68	1,266.65
tblVehicleEF	OBUS	67.80	68.32
tblVehicleEF	OBUS	0.21	0.56
tblVehicleEF	OBUS	0.68	1.70
tblVehicleEF	OBUS	2.53	2.64
tblVehicleEF	OBUS	2.4000e-005	2.4800e-004
tblVehicleEF	OBUS	2.6330e-003	8.7020e-003
tblVehicleEF	OBUS	8.2900e-004	7.8900e-004
tblVehicleEF	OBUS	2.3000e-005	2.3700e-004
tblVehicleEF	OBUS	2.5030e-003	8.3100e-003
tblVehicleEF	OBUS	7.6200e-004	7.2500e-004
tblVehicleEF	OBUS	1.4400e-003	1.5180e-003

tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.03	0.04
tblVehicleEF	OBUS	7.4400e-004	7.5800e-004
tblVehicleEF	OBUS	0.04	0.07
tblVehicleEF	OBUS	0.04	0.04
tblVehicleEF	OBUS	0.33	0.36
tblVehicleEF	OBUS	9.1700e-004	1.0040e-003
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.7000e-004	7.8500e-004
tblVehicleEF	OBUS	1.4400e-003	1.5180e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.05	0.06
tblVehicleEF	OBUS	7.4400e-004	7.5800e-004
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	0.04	0.04
tblVehicleEF	OBUS	0.36	0.40
tblVehicleEF	SBUS	0.84	0.86
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.06	0.07
tblVehicleEF	SBUS	8.28	8.04
tblVehicleEF	SBUS	0.67	0.79
tblVehicleEF	SBUS	7.16	7.53
tblVehicleEF	SBUS	1,105.31	1,136.99
tblVehicleEF	SBUS	1,070.53	1,088.61
tblVehicleEF	SBUS	56.44	53.57
tblVehicleEF	SBUS	8.50	9.91
tblVehicleEF	SBUS	3.81	4.55

tblVehicleEF	SBUS	11.84	12.42
tblVehicleEF	SBUS	8.1160e-003	0.01
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	8.5300e-004	7.8000e-004
tblVehicleEF	SBUS	7.7650e-003	0.01
tblVehicleEF	SBUS	2.6580e-003	2.6770e-003
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	7.8400e-004	7.1700e-004
tblVehicleEF	SBUS	3.3720e-003	3.3870e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	0.99	0.97
tblVehicleEF	SBUS	1.8240e-003	1.7160e-003
tblVehicleEF	SBUS	0.10	0.11
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.38	0.40
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	6.8800e-004	6.6600e-004
tblVehicleEF	SBUS	3.3720e-003	3.3870e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	1.43	1.40
tblVehicleEF	SBUS	1.8240e-003	1.7160e-003
tblVehicleEF	SBUS	0.12	0.13
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.41	0.43
tblVehicleEF	SBUS	0.84	0.86

tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.05	0.06
tblVehicleEF	SBUS	8.18	7.92
tblVehicleEF	SBUS	0.68	0.80
tblVehicleEF	SBUS	5.81	6.11
tblVehicleEF	SBUS	1,154.44	1,188.84
tblVehicleEF	SBUS	1,070.53	1,088.61
tblVehicleEF	SBUS	56.44	53.57
tblVehicleEF	SBUS	8.77	10.22
tblVehicleEF	SBUS	3.59	4.29
tblVehicleEF	SBUS	11.81	12.39
tblVehicleEF	SBUS	6.8420e-003	9.0250e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	8.5300e-004	7.8000e-004
tblVehicleEF	SBUS	6.5460e-003	8.6350e-003
tblVehicleEF	SBUS	2.6580e-003	2.6770e-003
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	7.8400e-004	7.1700e-004
tblVehicleEF	SBUS	4.9610e-003	4.9940e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	0.98	0.97
tblVehicleEF	SBUS	2.5750e-003	2.4540e-003
tblVehicleEF	SBUS	0.10	0.11
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.34	0.35
tblVehicleEF	SBUS	0.01	0.01

tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	6.6600e-004	6.4200e-004
tblVehicleEF	SBUS	4.9610e-003	4.9940e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	1.42	1.39
tblVehicleEF	SBUS	2.5750e-003	2.4540e-003
tblVehicleEF	SBUS	0.12	0.13
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.37	0.38
tblVehicleEF	SBUS	0.84	0.86
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.06	0.07
tblVehicleEF	SBUS	8.43	8.21
tblVehicleEF	SBUS	0.66	0.78
tblVehicleEF	SBUS	7.40	7.78
tblVehicleEF	SBUS	1,037.46	1,065.38
tblVehicleEF	SBUS	1,070.53	1,088.61
tblVehicleEF	SBUS	56.44	53.57
tblVehicleEF	SBUS	8.13	9.47
tblVehicleEF	SBUS	3.74	4.47
tblVehicleEF	SBUS	11.85	12.43
tblVehicleEF	SBUS	9.8760e-003	0.01
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	8.5300e-004	7.8000e-004
tblVehicleEF	SBUS	9.4480e-003	0.01
tblVehicleEF	SBUS	2.6580e-003	2.6770e-003

tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	7.8400e-004	7.1700e-004
tblVehicleEF	SBUS	3.3940e-003	3.5050e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	0.99	0.97
tblVehicleEF	SBUS	1.7490e-003	1.6510e-003
tblVehicleEF	SBUS	0.10	0.11
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.39	0.40
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	6.9200e-004	6.7000e-004
tblVehicleEF	SBUS	3.3940e-003	3.5050e-003
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	1.43	1.40
tblVehicleEF	SBUS	1.7490e-003	1.6510e-003
tblVehicleEF	SBUS	0.12	0.13
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.42	0.44
tblVehicleEF	UBUS	2.44	2.78
tblVehicleEF	UBUS	0.05	0.05
tblVehicleEF	UBUS	10.68	11.79
tblVehicleEF	UBUS	8.84	8.90
tblVehicleEF	UBUS	1,951.45	1,987.48
tblVehicleEF	UBUS	100.38	92.58
tblVehicleEF	UBUS	9.33	10.68
tblVehicleEF	UBUS	15.09	15.66

tblVehicleEF	UBUS	0.60	0.62
tblVehicleEF	UBUS	0.12	0.14
tblVehicleEF	UBUS	1.1360e-003	1.0320e-003
tblVehicleEF	UBUS	0.26	0.27
tblVehicleEF	UBUS	0.12	0.13
tblVehicleEF	UBUS	1.0450e-003	9.4900e-004
tblVehicleEF	UBUS	4.1100e-003	4.1600e-003
tblVehicleEF	UBUS	0.07	0.07
tblVehicleEF	UBUS	2.4100e-003	2.3580e-003
tblVehicleEF	UBUS	0.79	0.90
tblVehicleEF	UBUS	0.02	0.02
tblVehicleEF	UBUS	0.68	0.67
tblVehicleEF	UBUS	9.8060e-003	9.9290e-003
tblVehicleEF	UBUS	1.1630e-003	1.0860e-003
tblVehicleEF	UBUS	4.1100e-003	4.1600e-003
tblVehicleEF	UBUS	0.07	0.07
tblVehicleEF	UBUS	2.4100e-003	2.3580e-003
tblVehicleEF	UBUS	3.32	3.79
tblVehicleEF	UBUS	0.02	0.02
tblVehicleEF	UBUS	0.75	0.73
tblVehicleEF	UBUS	2.44	2.78
tblVehicleEF	UBUS	0.05	0.05
tblVehicleEF	UBUS	10.72	11.84
tblVehicleEF	UBUS	7.66	7.71
tblVehicleEF	UBUS	1,951.45	1,987.48
tblVehicleEF	UBUS	100.38	92.58
tblVehicleEF	UBUS	8.79	10.07

tblVehicleEF	UBUS	15.04	15.61
tblVehicleEF	UBUS	0.60	0.62
tblVehicleEF	UBUS	0.12	0.14
tblVehicleEF	UBUS	1.1360e-003	1.0320e-003
tblVehicleEF	UBUS	0.26	0.27
tblVehicleEF	UBUS	0.12	0.13
tblVehicleEF	UBUS	1.0450e-003	9.4900e-004
tblVehicleEF	UBUS	5.8640e-003	5.9260e-003
tblVehicleEF	UBUS	0.07	0.07
tblVehicleEF	UBUS	3.3120e-003	3.2450e-003
tblVehicleEF	UBUS	0.80	0.91
tblVehicleEF	UBUS	0.02	0.02
tblVehicleEF	UBUS	0.63	0.61
tblVehicleEF	UBUS	9.8070e-003	9.9300e-003
tblVehicleEF	UBUS	1.1430e-003	1.0650e-003
tblVehicleEF	UBUS	5.8640e-003	5.9260e-003
tblVehicleEF	UBUS	0.07	0.07
tblVehicleEF	UBUS	3.3120e-003	3.2450e-003
tblVehicleEF	UBUS	3.33	3.80
tblVehicleEF	UBUS	0.02	0.02
tblVehicleEF	UBUS	0.69	0.67
tblVehicleEF	UBUS	2.44	2.78
tblVehicleEF	UBUS	0.05	0.05
tblVehicleEF	UBUS	10.66	11.77
tblVehicleEF	UBUS	9.05	9.11
tblVehicleEF	UBUS	1,951.45	1,987.48
tblVehicleEF	UBUS	100.38	92.58

tblVehicleEF	UBUS	9.15	10.47
tblVehicleEF	UBUS	15.10	15.67
tblVehicleEF	UBUS	0.60	0.62
tblVehicleEF	UBUS	0.12	0.14
tblVehicleEF	UBUS	1.1360e-003	1.0320e-003
tblVehicleEF	UBUS	0.26	0.27
tblVehicleEF	UBUS	0.12	0.13
tblVehicleEF	UBUS	1.0450e-003	9.4900e-004
tblVehicleEF	UBUS	4.6290e-003	4.7460e-003
tblVehicleEF	UBUS	0.08	0.09
tblVehicleEF	UBUS	2.5090e-003	2.4840e-003
tblVehicleEF	UBUS	0.79	0.90
tblVehicleEF	UBUS	0.03	0.03
tblVehicleEF	UBUS	0.70	0.68
tblVehicleEF	UBUS	9.8060e-003	9.9290e-003
tblVehicleEF	UBUS	1.1670e-003	1.0900e-003
tblVehicleEF	UBUS	4.6290e-003	4.7460e-003
tblVehicleEF	UBUS	0.08	0.09
tblVehicleEF	UBUS	2.5090e-003	2.4840e-003
tblVehicleEF	UBUS	3.31	3.78
tblVehicleEF	UBUS	0.03	0.03
tblVehicleEF	UBUS	0.76	0.75
tblVehicleTrips	ST_TR	1.32	0.00
tblVehicleTrips	SU_TR	0.68	0.00
tblVehicleTrips	WD_TR	6.97	0.08
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorToDistribute	1,272.00	0.00

tblWater	ElectricityIntensityFactorToSupply	9,727.00	0.00
tblWater	ElectricityIntensityFactorToTreat	111.00	0.00
tblWater	IndoorWaterUseRate	1,156,250.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	1.6786	13.5506	14.3287	0.0250	0.8981	0.9071	1.8052	0.1520	0.8480	1.0000	0.0000	2,422.2359	2,422.2359	0.5518	0.0000	2,436.0302
2022	1.4159	11.9567	14.0598	0.0248	0.4918	0.6237	1.1155	0.1304	0.5819	0.7124	0.0000	2,406.1863	2,406.1863	0.5487	0.0000	2,419.9037
Maximum	**1.6786**	**13.5506**	**14.3287**	**0.0250**	**0.8981**	**0.9071**	**1.8052**	**0.1520**	**0.8480**	**1.0000**	**0.0000**	**2,422.2359**	**2,422.2359**	**0.5518**	**0.0000**	**2,436.0302**

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					
2021	1.6786	13.5506	14.3287	0.0250	0.5587	0.9071	1.4659	0.1304	0.8480	0.9626	0.0000	2,422.2359	2,422.2359	0.5518	0.0000	2,436.0302
2022	1.4159	11.9567	14.0598	0.0248	0.4918	0.6237	1.1155	0.1304	0.5819	0.7124	0.0000	2,406.1863	2,406.1863	0.5487	0.0000	2,419.9037
Maximum	**1.6786**	**13.5506**	**14.3287**	**0.0250**	**0.5587**	**0.9071**	**1.4659**	**0.1304**	**0.8480**	**0.9626**	**0.0000**	**2,422.2359**	**2,422.2359**	**0.5518**	**0.0000**	**2,436.0302**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**24.42**	**0.00**	**11.62**	**7.63**	**0.00**	**2.18**	**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	0.1118	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Energy	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Mobile	8.6000e-004	4.4400e-003	0.0126	4.0000e-005	3.7700e-003	4.0000e-005	3.8100e-003	1.0100e-003	4.0000e-005	1.0400e-003		4.5543	4.5543	2.4000e-004		4.5603
Total	**0.1153**	**0.0288**	**0.0335**	**1.9000e-004**	**3.7700e-003**	**1.8900e-003**	**5.6600e-003**	**1.0100e-003**	**1.8900e-003**	**2.8900e-003**		**33.7254**	**33.7254**	**8.0000e-004**	**5.3000e-004**	**33.9049**

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	0.1118	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Energy	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Mobile	8.6000e-004	4.4400e-003	0.0126	4.0000e-005	3.7700e-003	4.0000e-005	3.8100e-003	1.0100e-003	4.0000e-005	1.0400e-003		4.5543	4.5543	2.4000e-004		4.5603
Total	**0.1153**	**0.0288**	**0.0335**	**1.9000e-004**	**3.7700e-003**	**1.8900e-003**	**5.6600e-003**	**1.0100e-003**	**1.8900e-003**	**2.8900e-003**		**33.7254**	**33.7254**	**8.0000e-004**	**5.3000e-004**	**33.9049**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	12/6/2021	12/17/2021	5	10	
2	Site Preparation	Site Preparation	12/18/2021	12/20/2021	5	1	
3	Building Construction	Building Construction	12/21/2021	5/9/2022	5	100	

Acres of Grading (Site Preparation Phase): 0.5

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
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Generator Sets	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	1.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Site Preparation	Generator Sets	1	8.00	84	0.74
Site Preparation	Graders	1	8.00	84	0.74
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Other Construction Equipment	1	8.00	172	0.42
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Welders	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	30.00	0.00	14.00	14.70	6.90	12.40	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	30.00	1.00	0.00	14.70	6.90	12.40	LD_Mix	HDT_Mix	HHDT
Building Construction	6	44.00	0.00	0.00	14.70	6.90	12.40	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 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					0.0809	0.0000	0.0809	0.0123	0.0000	0.0123			0.0000			0.0000
Off-Road	0.9961	8.8430	9.3791	0.0159		0.4831	0.4831		0.4710	0.4710		1,514.4234	1,514.4234	0.1711		1,518.7007
Total	**0.9961**	**8.8430**	**9.3791**	**0.0159**	**0.0809**	**0.4831**	**0.5640**	**0.0123**	**0.4710**	**0.4833**		**1,514.4234**	**1,514.4234**	**0.1711**		**1,518.7007**

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	8.3600e-003	0.2834	0.0662	7.1000e-004	0.0152	7.5000e-004	0.0159	4.1600e-003	7.2000e-004	4.8800e-003		77.5003	77.5003	6.1000e-003		77.6528
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	0.1431	0.0978	1.1048	3.2300e-003	0.3353	2.7100e-003	0.3380	0.0889	2.5000e-003	0.0914		321.6753	321.6753	9.4700e-003		321.9120
Total	**0.1514**	**0.3812**	**1.1710**	**3.9400e-003**	**0.3505**	**3.4600e-003**	**0.3540**	**0.0931**	**3.2200e-003**	**0.0963**		**399.1756**	**399.1756**	**0.0156**		**399.5648**

3.2 Demolition - 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					0.0316	0.0000	0.0316	4.7800e-003	0.0000	4.7800e-003			0.0000			0.0000
Off-Road	0.9961	8.8430	9.3791	0.0159		0.4831	0.4831		0.4710	0.4710	0.0000	1,514.4234	1,514.4234	0.1711		1,518.7007
Total	**0.9961**	**8.8430**	**9.3791**	**0.0159**	**0.0316**	**0.4831**	**0.5146**	**4.7800e-003**	**0.4710**	**0.4758**	**0.0000**	**1,514.4234**	**1,514.4234**	**0.1711**		**1,518.7007**

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	8.3600e-003	0.2834	0.0662	7.1000e-004	0.0152	7.5000e-004	0.0159	4.1600e-003	7.2000e-004	4.8800e-003		77.5003	77.5003	6.1000e-003		77.6528
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	0.1431	0.0978	1.1048	3.2300e-003	0.3353	2.7100e-003	0.3380	0.0889	2.5000e-003	0.0914		321.6753	321.6753	9.4700e-003		321.9120
Total	**0.1514**	**0.3812**	**1.1710**	**3.9400e-003**	**0.3505**	**3.4600e-003**	**0.3540**	**0.0931**	**3.2200e-003**	**0.0963**		**399.1756**	**399.1756**	**0.0156**		**399.5648**

3.3 Site Preparation - 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					0.5564	0.0000	0.5564	0.0612	0.0000	0.0612			0.0000			0.0000
Off-Road	1.5323	12.8736	10.8255	0.0150		0.9042	0.9042		0.8453	0.8453		1,438.1831	1,438.1831	0.2954		1,445.5688
Total	**1.5323**	**12.8736**	**10.8255**	**0.0150**	**0.5564**	**0.9042**	**1.4606**	**0.0612**	**0.8453**	**0.9065**		**1,438.1831**	**1,438.1831**	**0.2954**		**1,445.5688**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.1900e-003	0.0969	0.0281	2.5000e-004	6.4000e-003	2.0000e-004	6.6100e-003	1.8400e-003	2.0000e-004	2.0400e-003		26.7346	26.7346	1.7300e-003		26.7777
Worker	0.1431	0.0978	1.1048	3.2300e-003	0.3353	2.7100e-003	0.3380	0.0889	2.5000e-003	0.0914		321.6753	321.6753	9.4700e-003		321.9120
Total	**0.1462**	**0.1947**	**1.1329**	**3.4800e-003**	**0.3417**	**2.9100e-003**	**0.3447**	**0.0908**	**2.7000e-003**	**0.0935**		**348.4099**	**348.4099**	**0.0112**		**348.6897**

3.3 Site Preparation - 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					0.2170	0.0000	0.2170	0.0239	0.0000	0.0239			0.0000			0.0000
Off-Road	1.5323	12.8736	10.8255	0.0150		0.9042	0.9042		0.8453	0.8453	0.0000	1,438.1831	1,438.1831	0.2954		1,445.5688
Total	**1.5323**	**12.8736**	**10.8255**	**0.0150**	**0.2170**	**0.9042**	**1.1212**	**0.0239**	**0.8453**	**0.8692**	**0.0000**	**1,438.1831**	**1,438.1831**	**0.2954**		**1,445.5688**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.1900e-003	0.0969	0.0281	2.5000e-004	6.4000e-003	2.0000e-004	6.6100e-003	1.8400e-003	2.0000e-004	2.0400e-003		26.7346	26.7346	1.7300e-003		26.7777
Worker	0.1431	0.0978	1.1048	3.2300e-003	0.3353	2.7100e-003	0.3380	0.0889	2.5000e-003	0.0914		321.6753	321.6753	9.4700e-003		321.9120
Total	**0.1462**	**0.1947**	**1.1329**	**3.4800e-003**	**0.3417**	**2.9100e-003**	**0.3447**	**0.0908**	**2.7000e-003**	**0.0935**		**348.4099**	**348.4099**	**0.0112**		**348.6897**

3.4 Building Construction - 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					
Off-Road	1.3580	13.4071	12.7084	0.0202		0.7303	0.7303		0.6812	0.6812		1,950.4454	1,950.4454	0.5379		1,963.8927
Total	**1.3580**	**13.4071**	**12.7084**	**0.0202**		**0.7303**	**0.7303**		**0.6812**	**0.6812**		**1,950.4454**	**1,950.4454**	**0.5379**		**1,963.8927**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2098	0.1435	1.6203	4.7400e-003	0.4918	3.9700e-003	0.4958	0.1304	3.6600e-003	0.1341		471.7905	471.7905	0.0139		472.1376
Total	**0.2098**	**0.1435**	**1.6203**	**4.7400e-003**	**0.4918**	**3.9700e-003**	**0.4958**	**0.1304**	**3.6600e-003**	**0.1341**		**471.7905**	**471.7905**	**0.0139**		**472.1376**

3.4 Building Construction - 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					
Off-Road	1.3580	13.4071	12.7084	0.0202		0.7303	0.7303		0.6812	0.6812	0.0000	1,950.4454	1,950.4454	0.5379		1,963.8927
Total	**1.3580**	**13.4071**	**12.7084**	**0.0202**		**0.7303**	**0.7303**		**0.6812**	**0.6812**	**0.0000**	**1,950.4454**	**1,950.4454**	**0.5379**		**1,963.8927**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2098	0.1435	1.6203	4.7400e-003	0.4918	3.9700e-003	0.4958	0.1304	3.6600e-003	0.1341		471.7905	471.7905	0.0139		472.1376
Total	**0.2098**	**0.1435**	**1.6203**	**4.7400e-003**	**0.4918**	**3.9700e-003**	**0.4958**	**0.1304**	**3.6600e-003**	**0.1341**		**471.7905**	**471.7905**	**0.0139**		**472.1376**

3.4 Building Construction - 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					
Off-Road	1.2189	11.8271	12.5674	0.0202		0.6199	0.6199		0.5784	0.5784		1,950.9757	1,950.9757	0.5362		1,964.3798
Total	**1.2189**	**11.8271**	**12.5674**	**0.0202**		**0.6199**	**0.6199**		**0.5784**	**0.5784**		**1,950.9757**	**1,950.9757**	**0.5362**		**1,964.3798**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1971	0.1296	1.4924	4.5700e-003	0.4918	3.8500e-003	0.4957	0.1304	3.5500e-003	0.1340		455.2106	455.2106	0.0125		455.5239
Total	**0.1971**	**0.1296**	**1.4924**	**4.5700e-003**	**0.4918**	**3.8500e-003**	**0.4957**	**0.1304**	**3.5500e-003**	**0.1340**		**455.2106**	**455.2106**	**0.0125**		**455.5239**

3.4 Building Construction - 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					
Off-Road	1.2189	11.8271	12.5674	0.0202		0.6199	0.6199		0.5784	0.5784	0.0000	1,950.9757	1,950.9757	0.5362		1,964.3798
Total	**1.2189**	**11.8271**	**12.5674**	**0.0202**		**0.6199**	**0.6199**		**0.5784**	**0.5784**	**0.0000**	**1,950.9757**	**1,950.9757**	**0.5362**		**1,964.3798**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1971	0.1296	1.4924	4.5700e-003	0.4918	3.8500e-003	0.4957	0.1304	3.5500e-003	0.1340		455.2106	455.2106	0.0125		455.5239
Total	**0.1971**	**0.1296**	**1.4924**	**4.5700e-003**	**0.4918**	**3.8500e-003**	**0.4957**	**0.1304**	**3.5500e-003**	**0.1340**		**455.2106**	**455.2106**	**0.0125**		**455.5239**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	8.6000e-004	4.4400e-003	0.0126	4.0000e-005	3.7700e-003	4.0000e-005	3.8100e-003	1.0100e-003	4.0000e-005	1.0400e-003		4.5543	4.5543	2.4000e-004		4.5603
Unmitigated	8.6000e-004	4.4400e-003	0.0126	4.0000e-005	3.7700e-003	4.0000e-005	3.8100e-003	1.0100e-003	4.0000e-005	1.0400e-003		4.5543	4.5543	2.4000e-004		4.5603

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	0.40	0.00	0.00	1,265	1,265
Total	0.40	0.00	0.00	1,265	1,265

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	16.60	8.40	6.90	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.547192	0.045177	0.202743	0.121510	0.016147	0.006143	0.019743	0.029945	0.002479	0.002270	0.005078	0.000682	0.000891

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive 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	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
NaturalGas Unmitigated	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434

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	247.945	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Total		**2.6700e-003**	**0.0243**	**0.0204**	**1.5000e-004**		**1.8500e-003**	**1.8500e-003**		**1.8500e-003**	**1.8500e-003**		**29.1700**	**29.1700**	**5.6000e-004**	**5.3000e-004**	**29.3434**

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	0.247945	2.6700e-003	0.0243	0.0204	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.1700	29.1700	5.6000e-004	5.3000e-004	29.3434
Total		**2.6700e-003**	**0.0243**	**0.0204**	**1.5000e-004**		**1.8500e-003**	**1.8500e-003**		**1.8500e-003**	**1.8500e-003**		**29.1700**	**29.1700**	**5.6000e-004**	**5.3000e-004**	**29.3434**

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	0.1118	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Unmitigated	0.1118	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-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	0.0127					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0990					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.0000e-005	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Total	**0.1118**	**0.0000**	**5.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.0900e-003**	**1.0900e-003**	**0.0000**		**1.1700e-003**

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	0.0127					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0990					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.0000e-005	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Total	**0.1118**	**0.0000**	**5.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.0900e-003**	**1.0900e-003**	**0.0000**		**1.1700e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 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

Phase 2 Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	5.00	1000sqft	0.11	5,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2023
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	1227.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Phase 2 Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System - Los Angeles-South Coast County, Annual

Project Characteristics -

Land Use -

Construction Phase - From PD

Off-road Equipment - From PD. Other Construction Equipment is "barge".

Off-road Equipment - From PD

Off-road Equipment - From PD

Trips and VMT - From PD

Demolition - 27 cubic yards of concrete demolished

Grading - From PD

Vehicle Trips - 3 trips/week; 156 annual trips

Energy Use - Project produces 96.58 MWh annually

Water And Wastewater - No water usage on site

Solid Waste - No solid waste generated on site

Construction Off-road Equipment Mitigation - SCAQMD Rule 403

Mobile Land Use Mitigation -

Energy Mitigation -

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblEnergyUse	T24E	2.25	10.47
tblGrading	MaterialExported	0.00	64.00
tblGrading	MaterialImported	0.00	167.00
tblOffRoadEquipment	HorsePower	187.00	84.00

tblOffRoadEquipment	HorsePower	84.00	81.00
tblOffRoadEquipment	HorsePower	46.00	97.00
tblOffRoadEquipment	LoadFactor	0.41	0.74
tblOffRoadEquipment	LoadFactor	0.74	0.73
tblOffRoadEquipment	LoadFactor	0.45	0.37
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Building Construction
tblSolidWaste	SolidWasteGenerationRate	6.20	0.00
tblTripsAndVMT	HaulingTripLength	20.00	12.40
tblTripsAndVMT	HaulingTripLength	20.00	12.40
tblTripsAndVMT	HaulingTripLength	20.00	12.40
tblTripsAndVMT	HaulingTripNumber	4.00	14.00
tblTripsAndVMT	HaulingTripNumber	29.00	0.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	1.00	0.00
tblTripsAndVMT	WorkerTripNumber	10.00	30.00
tblTripsAndVMT	WorkerTripNumber	8.00	30.00
tblTripsAndVMT	WorkerTripNumber	2.00	44.00
tblVehicleTrips	ST_TR	1.32	0.00

tblVehicleTrips	SU_TR	0.68	0.00
tblVehicleTrips	WD_TR	6.97	0.08
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorToDistribute	1,272.00	0.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	0.00
tblWater	ElectricityIntensityFactorToTreat	111.00	0.00
tblWater	IndoorWaterUseRate	1,156,250.00	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.0135	0.1137	0.1236	2.2000e-004	4.7400e-003	6.1900e-003	0.0109	1.1700e-003	5.8800e-003	7.0500e-003	0.0000	19.4431	19.4431	3.2400e-003	0.0000	19.5240
2022	0.0635	0.5442	0.6416	1.1300e-003	0.0219	0.0284	0.0503	5.8300e-003	0.0265	0.0323	0.0000	99.6324	99.6324	0.0227	0.0000	100.1989
Maximum	**0.0635**	**0.5442**	**0.6416**	**1.1300e-003**	**0.0219**	**0.0284**	**0.0503**	**5.8300e-003**	**0.0265**	**0.0323**	**0.0000**	**99.6324**	**99.6324**	**0.0227**	**0.0000**	**100.1989**

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					
2021	0.0135	0.1137	0.1236	2.2000e-004	4.3200e-003	6.1900e-003	0.0105	1.1100e-003	5.8800e-003	6.9900e-003	0.0000	19.4430	19.4430	3.2400e-003	0.0000	19.5240
2022	0.0635	0.5442	0.6416	1.1300e-003	0.0219	0.0284	0.0503	5.8300e-003	0.0265	0.0323	0.0000	99.6323	99.6323	0.0227	0.0000	100.1988
Maximum	**0.0635**	**0.5442**	**0.6416**	**1.1300e-003**	**0.0219**	**0.0284**	**0.0503**	**5.8300e-003**	**0.0265**	**0.0323**	**0.0000**	**99.6323**	**99.6323**	**0.0227**	**0.0000**	**100.1988**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**1.57**	**0.00**	**0.69**	**0.86**	**0.00**	**0.15**	**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	12-6-2021	3-5-2022	0.4253	0.4253
2	3-6-2022	6-5-2022	0.3100	0.3100
		Highest	0.4253	0.4253

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	0.0204	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.2000e-004	1.2000e-004	0.0000	0.0000	1.3000e-004
Energy	4.9000e-004	4.4400e-003	3.7300e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	58.6319	58.6319	1.3600e-003	3.5000e-004	58.7707
Mobile	9.0000e-005	4.3000e-004	1.4200e-003	1.0000e-005	4.8000e-004	0.0000	4.8000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.5128	0.5128	2.0000e-005	0.0000	0.5134
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
Total	**0.0210**	**4.8700e-003**	**5.2100e-003**	**4.0000e-005**	**4.8000e-004**	**3.4000e-004**	**8.2000e-004**	**1.3000e-004**	**3.4000e-004**	**4.7000e-004**	**0.0000**	**59.1448**	**59.1448**	**1.3800e-003**	**3.5000e-004**	**59.2843**

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	0.0204	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.2000e-004	1.2000e-004	0.0000	0.0000	1.3000e-004
Energy	4.9000e-004	4.4400e-003	3.7300e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	58.6319	58.6319	1.3600e-003	3.5000e-004	58.7707
Mobile	9.0000e-005	4.3000e-004	1.4200e-003	1.0000e-005	4.8000e-004	0.0000	4.8000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.5128	0.5128	2.0000e-005	0.0000	0.5134
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
Total	**0.0210**	**4.8700e-003**	**5.2100e-003**	**4.0000e-005**	**4.8000e-004**	**3.4000e-004**	**8.2000e-004**	**1.3000e-004**	**3.4000e-004**	**4.7000e-004**	**0.0000**	**59.1448**	**59.1448**	**1.3800e-003**	**3.5000e-004**	**59.2843**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	12/6/2021	12/17/2021	5	10	
2	Site Preparation	Site Preparation	12/18/2021	12/20/2021	5	1	
3	Building Construction	Building Construction	12/21/2021	5/9/2022	5	100	

Acres of Grading (Site Preparation Phase): 0.5

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
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Generator Sets	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	1.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Site Preparation	Generator Sets	1	8.00	84	0.74
Site Preparation	Graders	1	8.00	84	0.74
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Other Construction Equipment	1	8.00	172	0.42
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Welders	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	30.00	0.00	14.00	14.70	6.90	12.40	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	30.00	1.00	0.00	14.70	6.90	12.40	LD_Mix	HDT_Mix	HHDT
Building Construction	6	44.00	0.00	0.00	14.70	6.90	12.40	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 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					4.0000e-004	0.0000	4.0000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.9800e-003	0.0442	0.0469	8.0000e-005		2.4200e-003	2.4200e-003		2.3600e-003	2.3600e-003	0.0000	6.8693	6.8693	7.8000e-004	0.0000	6.8887
Total	**4.9800e-003**	**0.0442**	**0.0469**	**8.0000e-005**	**4.0000e-004**	**2.4200e-003**	**2.8200e-003**	**6.0000e-005**	**2.3600e-003**	**2.4200e-003**	**0.0000**	**6.8693**	**6.8693**	**7.8000e-004**	**0.0000**	**6.8887**

3.2 Demolition - 2021

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	4.0000e-005	1.4500e-003	3.2000e-004	0.0000	7.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.3569	0.3569	3.0000e-005	0.0000	0.3576
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.5000e-004	5.0000e-004	5.6700e-003	2.0000e-005	1.6400e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.4834	1.4834	4.0000e-005	0.0000	1.4845
Total	**6.9000e-004**	**1.9500e-003**	**5.9900e-003**	**2.0000e-005**	**1.7100e-003**	**1.0000e-005**	**1.7400e-003**	**4.6000e-004**	**1.0000e-005**	**4.7000e-004**	**0.0000**	**1.8403**	**1.8403**	**7.0000e-005**	**0.0000**	**1.8421**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.6000e-004	0.0000	1.6000e-004	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.9800e-003	0.0442	0.0469	8.0000e-005		2.4200e-003	2.4200e-003		2.3600e-003	2.3600e-003	0.0000	6.8693	6.8693	7.8000e-004	0.0000	6.8887
Total	**4.9800e-003**	**0.0442**	**0.0469**	**8.0000e-005**	**1.6000e-004**	**2.4200e-003**	**2.5800e-003**	**2.0000e-005**	**2.3600e-003**	**2.3800e-003**	**0.0000**	**6.8693**	**6.8693**	**7.8000e-004**	**0.0000**	**6.8887**

3.2 Demolition - 2021

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	4.0000e-005	1.4500e-003	3.2000e-004	0.0000	7.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.3569	0.3569	3.0000e-005	0.0000	0.3576
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.5000e-004	5.0000e-004	5.6700e-003	2.0000e-005	1.6400e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.4834	1.4834	4.0000e-005	0.0000	1.4845
Total	**6.9000e-004**	**1.9500e-003**	**5.9900e-003**	**2.0000e-005**	**1.7100e-003**	**1.0000e-005**	**1.7400e-003**	**4.6000e-004**	**1.0000e-005**	**4.7000e-004**	**0.0000**	**1.8403**	**1.8403**	**7.0000e-005**	**0.0000**	**1.8421**

3.3 Site Preparation - 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					2.8000e-004	0.0000	2.8000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.7000e-004	6.4400e-003	5.4100e-003	1.0000e-005		4.5000e-004	4.5000e-004		4.2000e-004	4.2000e-004	0.0000	0.6524	0.6524	1.3000e-004	0.0000	0.6557
Total	**7.7000e-004**	**6.4400e-003**	**5.4100e-003**	**1.0000e-005**	**2.8000e-004**	**4.5000e-004**	**7.3000e-004**	**3.0000e-005**	**4.2000e-004**	**4.5000e-004**	**0.0000**	**0.6524**	**0.6524**	**1.3000e-004**	**0.0000**	**0.6557**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	5.0000e-005	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0123	0.0123	0.0000	0.0000	0.0123
Worker	6.0000e-005	5.0000e-005	5.7000e-004	0.0000	1.6000e-004	0.0000	1.7000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1483	0.1483	0.0000	0.0000	0.1485
Total	**6.0000e-005**	**1.0000e-004**	**5.8000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**1.7000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1607**	**0.1607**	**0.0000**	**0.0000**	**0.1608**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.1000e-004	0.0000	1.1000e-004	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.7000e-004	6.4400e-003	5.4100e-003	1.0000e-005		4.5000e-004	4.5000e-004		4.2000e-004	4.2000e-004	0.0000	0.6524	0.6524	1.3000e-004	0.0000	0.6557
Total	**7.7000e-004**	**6.4400e-003**	**5.4100e-003**	**1.0000e-005**	**1.1000e-004**	**4.5000e-004**	**5.6000e-004**	**1.0000e-005**	**4.2000e-004**	**4.3000e-004**	**0.0000**	**0.6524**	**0.6524**	**1.3000e-004**	**0.0000**	**0.6557**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	5.0000e-005	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0123	0.0123	0.0000	0.0000	0.0123
Worker	6.0000e-005	5.0000e-005	5.7000e-004	0.0000	1.6000e-004	0.0000	1.7000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1483	0.1483	0.0000	0.0000	0.1485
Total	**6.0000e-005**	**1.0000e-004**	**5.8000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**1.7000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1607**	**0.1607**	**0.0000**	**0.0000**	**0.1608**

3.4 Building Construction - 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					
Off-Road	6.1100e-003	0.0603	0.0572	9.0000e-005		3.2900e-003	3.2900e-003		3.0700e-003	3.0700e-003	0.0000	7.9624	7.9624	2.2000e-003	0.0000	8.0173
Total	**6.1100e-003**	**0.0603**	**0.0572**	**9.0000e-005**		**3.2900e-003**	**3.2900e-003**		**3.0700e-003**	**3.0700e-003**	**0.0000**	**7.9624**	**7.9624**	**2.2000e-003**	**0.0000**	**8.0173**

3.4 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.5000e-004	6.6000e-004	7.4900e-003	2.0000e-005	2.1700e-003	2.0000e-005	2.1900e-003	5.8000e-004	2.0000e-005	5.9000e-004	0.0000	1.9581	1.9581	6.0000e-005	0.0000	1.9595
Total	**8.5000e-004**	**6.6000e-004**	**7.4900e-003**	**2.0000e-005**	**2.1700e-003**	**2.0000e-005**	**2.1900e-003**	**5.8000e-004**	**2.0000e-005**	**5.9000e-004**	**0.0000**	**1.9581**	**1.9581**	**6.0000e-005**	**0.0000**	**1.9595**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.1100e-003	0.0603	0.0572	9.0000e-005		3.2900e-003	3.2900e-003		3.0700e-003	3.0700e-003	0.0000	7.9624	7.9624	2.2000e-003	0.0000	8.0173
Total	**6.1100e-003**	**0.0603**	**0.0572**	**9.0000e-005**		**3.2900e-003**	**3.2900e-003**		**3.0700e-003**	**3.0700e-003**	**0.0000**	**7.9624**	**7.9624**	**2.2000e-003**	**0.0000**	**8.0173**

3.4 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.5000e-004	6.6000e-004	7.4900e-003	2.0000e-005	2.1700e-003	2.0000e-005	2.1900e-003	5.8000e-004	2.0000e-005	5.9000e-004	0.0000	1.9581	1.9581	6.0000e-005	0.0000	1.9595
Total	**8.5000e-004**	**6.6000e-004**	**7.4900e-003**	**2.0000e-005**	**2.1700e-003**	**2.0000e-005**	**2.1900e-003**	**5.8000e-004**	**2.0000e-005**	**5.9000e-004**	**0.0000**	**1.9581**	**1.9581**	**6.0000e-005**	**0.0000**	**1.9595**

3.4 Building Construction - 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					
Off-Road	0.0555	0.5381	0.5718	9.2000e-004		0.0282	0.0282		0.0263	0.0263	0.0000	80.5302	80.5302	0.0221	0.0000	81.0835
Total	**0.0555**	**0.5381**	**0.5718**	**9.2000e-004**		**0.0282**	**0.0282**		**0.0263**	**0.0263**	**0.0000**	**80.5302**	**80.5302**	**0.0221**	**0.0000**	**81.0835**

3.4 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0800e-003	6.0600e-003	0.0698	2.1000e-004	0.0219	1.8000e-004	0.0221	5.8300e-003	1.6000e-004	5.9900e-003	0.0000	19.1022	19.1022	5.3000e-004	0.0000	19.1153
Total	**8.0800e-003**	**6.0600e-003**	**0.0698**	**2.1000e-004**	**0.0219**	**1.8000e-004**	**0.0221**	**5.8300e-003**	**1.6000e-004**	**5.9900e-003**	**0.0000**	**19.1022**	**19.1022**	**5.3000e-004**	**0.0000**	**19.1153**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0555	0.5381	0.5718	9.2000e-004		0.0282	0.0282		0.0263	0.0263	0.0000	80.5302	80.5302	0.0221	0.0000	81.0834
Total	**0.0555**	**0.5381**	**0.5718**	**9.2000e-004**		**0.0282**	**0.0282**		**0.0263**	**0.0263**	**0.0000**	**80.5302**	**80.5302**	**0.0221**	**0.0000**	**81.0834**

3.4 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0800e-003	6.0600e-003	0.0698	2.1000e-004	0.0219	1.8000e-004	0.0221	5.8300e-003	1.6000e-004	5.9900e-003	0.0000	19.1022	19.1022	5.3000e-004	0.0000	19.1153
Total	**8.0800e-003**	**6.0600e-003**	**0.0698**	**2.1000e-004**	**0.0219**	**1.8000e-004**	**0.0221**	**5.8300e-003**	**1.6000e-004**	**5.9900e-003**	**0.0000**	**19.1022**	**19.1022**	**5.3000e-004**	**0.0000**	**19.1153**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	9.0000e-005	4.3000e-004	1.4200e-003	1.0000e-005	4.8000e-004	0.0000	4.8000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.5128	0.5128	2.0000e-005	0.0000	0.5134
Unmitigated	9.0000e-005	4.3000e-004	1.4200e-003	1.0000e-005	4.8000e-004	0.0000	4.8000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.5128	0.5128	2.0000e-005	0.0000	0.5134

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	0.40	0.00	0.00	1,265	1,265
Total	0.40	0.00	0.00	1,265	1,265

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	16.60	8.40	6.90	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.545842	0.044768	0.205288	0.119317	0.015350	0.006227	0.020460	0.031333	0.002546	0.002133	0.005184	0.000692	0.000862

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	53.8025	53.8025	1.2700e-003	2.6000e-004	53.9126
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	53.8025	53.8025	1.2700e-003	2.6000e-004	53.9126
NaturalGas Mitigated	4.9000e-004	4.4400e-003	3.7300e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.8294	4.8294	9.0000e-005	9.0000e-005	4.8581
NaturalGas Unmitigated	4.9000e-004	4.4400e-003	3.7300e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.8294	4.8294	9.0000e-005	9.0000e-005	4.8581

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	90500	4.9000e-004	4.4400e-003	3.7300e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.8294	4.8294	9.0000e-005	9.0000e-005	4.8581
Total		**4.9000e-004**	**4.4400e-003**	**3.7300e-003**	**3.0000e-005**		**3.4000e-004**	**3.4000e-004**		**3.4000e-004**	**3.4000e-004**	**0.0000**	**4.8294**	**4.8294**	**9.0000e-005**	**9.0000e-005**	**4.8581**

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 Light Industry	90500	4.9000e-004	4.4400e-003	3.7300e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.8294	4.8294	9.0000e-005	9.0000e-005	4.8581
Total		**4.9000e-004**	**4.4400e-003**	**3.7300e-003**	**3.0000e-005**		**3.4000e-004**	**3.4000e-004**		**3.4000e-004**	**3.4000e-004**	**0.0000**	**4.8294**	**4.8294**	**9.0000e-005**	**9.0000e-005**	**4.8581**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	96600	53.8025	1.2700e-003	2.6000e-004	53.9126
Total		**53.8025**	**1.2700e-003**	**2.6000e-004**	**53.9126**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	96600	53.8025	1.2700e-003	2.6000e-004	53.9126
Total		**53.8025**	**1.2700e-003**	**2.6000e-004**	**53.9126**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0204	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.2000e-004	1.2000e-004	0.0000	0.0000	1.3000e-004
Unmitigated	0.0204	0.0000	6.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.2000e-004	1.2000e-004	0.0000	0.0000	1.3000e-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	2.3200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0181					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	1.2000e-004	1.2000e-004	0.0000	0.0000	1.3000e-004
Total	**0.0204**	**0.0000**	**6.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.2000e-004**	**1.2000e-004**	**0.0000**	**0.0000**	**1.3000e-004**

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	2.3200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0181					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	1.2000e-004	1.2000e-004	0.0000	0.0000	1.3000e-004
Total	**0.0204**	**0.0000**	**6.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.2000e-004**	**1.2000e-004**	**0.0000**	**0.0000**	**1.3000e-004**

7.0 Water Detail

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 Light Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

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
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

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

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
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

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
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX F
Noise and Vibration Assessment

Technical Memorandum

TO: Cristina Lowery
AECOM

FROM: Terry A. Hayes Associates Inc.

DATE: March 16, 2020

RE: Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System Project – Noise and Vibration Assessment

Introduction

Terry A. Hayes Associates Inc. (TAHA) has completed a Noise and Vibration Assessment for the Silver Lake and Ivanhoe Reservoir Aeration and Recirculation System Project (proposed project) in accordance with the provisions of the California Environmental Quality Act (CEQA) Statutes and Guidelines. This Assessment is organized as follows:

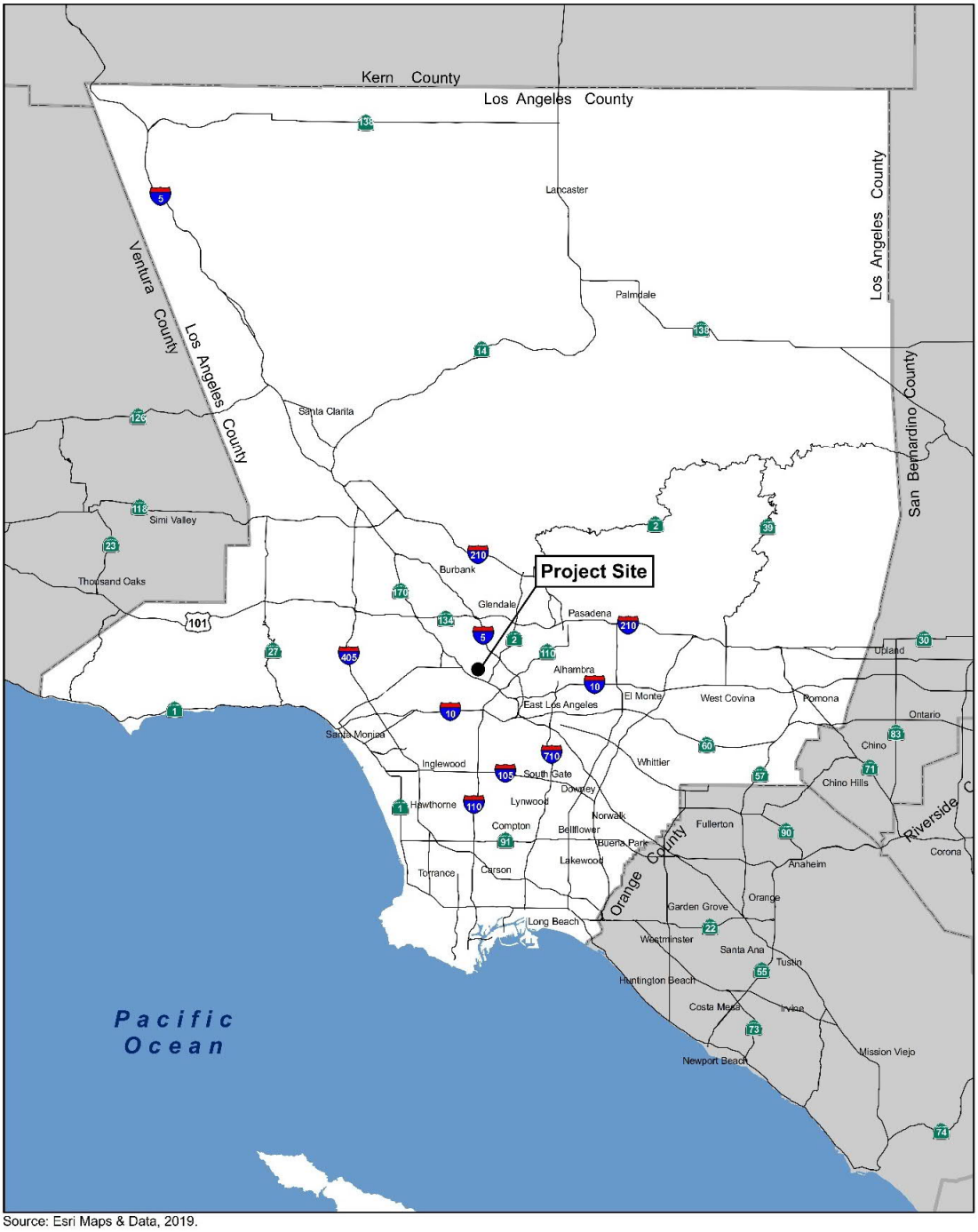
- Project Description
- Noise and Vibration Topical Information
- Existing Setting
- Regulatory Framework
- Significance Thresholds
- Methodology
- Impact Assessment
- References

Project Description

The Los Angeles Department of Water and Power (LADWP) proposes to implement the Silver Lake and Ivanhoe Reservoirs Aeration and Recirculation System Project (proposed project) within its Silver Lake Reservoir Complex (SLRC), which comprises the Silver Lake and Ivanhoe Reservoirs (the reservoirs).

The proposed project would be located in the Silver Lake community of the City of Los Angeles, approximately five miles north of downtown Los Angeles. **Figure 1** shows the regional vicinity of the project site. **Figure 2** shows the project location. The reservoirs require an aeration and recirculation system to ensure that reasonable water quality parameters are met for visual aesthetics and controlling odors. The proposed project would include the installation of a bubble plume aeration system and a recirculation pipe system to ensure oxygenation and destratification of the reservoirs. Destratification allows for the mixing of the reservoir water to allow for oxygen levels to be maintained throughout the reservoir. **Figure 3** shows the aeration and recirculation systems proposed to be installed in the reservoirs. The proposed project would be implemented in two phases as described below.

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Source: Esri Maps & Data, 2019.

Figure 1
Regional Map

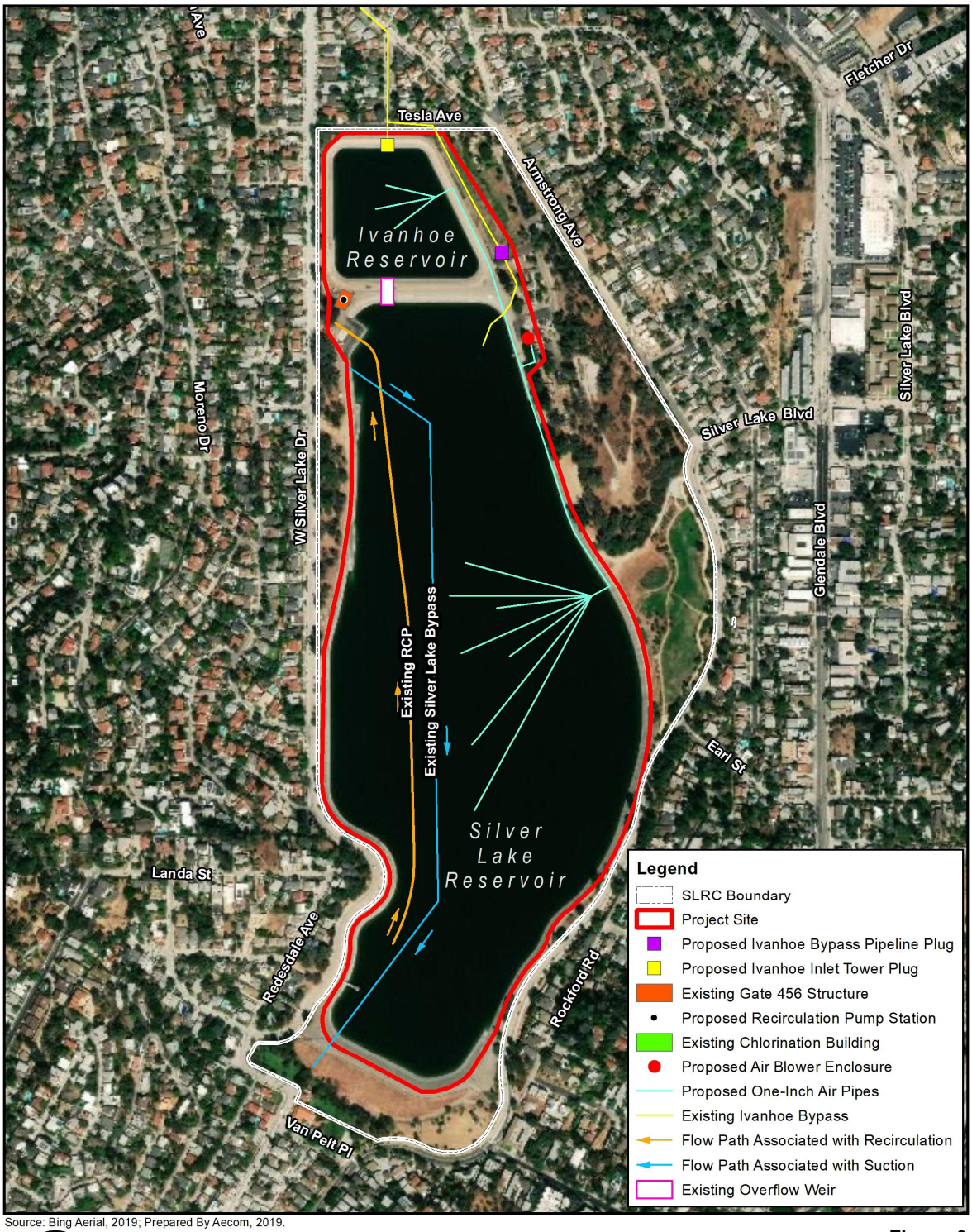


Source: Esri, 2020; Prepared By AECOM, 2020.

0 250 500 1,000 Feet

SLRC Boundary
Project Site

Figure 2
Project Location Map



Source: Bing Aerial, 2019; Prepared By Aecom, 2019.

0 250 500 1,000 Feet

Figure 3
Proposed Project
Aeration and Recirculation System

Phase 1 would include installation of an aeration system consisting of air blowers, air piping to each of the reservoirs, bubble plume system diffusers in each of the reservoirs, and aftercoolers. Two air blowers would be installed for each reservoir, including one in continuous operation and one to serve as a backup. The air blowers would be housed in an enclosure with ventilation and sound insulation. The air blower package enclosure would be located inside an existing chlorination building in the northeast portion of the SLRC between the two reservoirs.

Phase 2 would include the installation of a recirculation system consisting of a recirculation pump station, recirculation piping, and inflow from Ivanhoe Reservoir to Silver Lake Reservoir via the existing overflow weir. Additionally, two concrete plugs and approximately 400 feet of new recirculation piping would be installed within Ivanhoe Reservoir. The concrete plugs would be installed at the existing Ivanhoe Bypass and Ivanhoe Inlet Tower. The recirculation pump equipment would be installed at the existing Gate 456 structure, which is a fenced gate structure on the northwest corner of Silver Lake Reservoir that was historically used for water bypass when both Silver Lake and Ivanhoe Reservoirs were connected to the potable water system. Two submersible recirculation pumps would be installed along the depths of both Silver Lake and Ivanhoe Reservoirs and within the Gate 456 structure, with one pump on duty and the other on standby during normal operations. Both pumps would have the flexibility to operate simultaneously under special conditions. Suction intake would be located at the south end of the Silver Lake Reservoir along the existing Silver Lake Bypass pipeline and discharge would occur at the north end of Ivanhoe Reservoir. The recirculation piping would be connected to the recirculation pump to transfer water from Silver Lake Reservoir to Ivanhoe Reservoir over a partition wall within the Gate 456 structure. Inflow from Ivanhoe Reservoir to Silver Lake Reservoir would occur via the existing weir over the Silver Lake North Dam between the reservoirs.

Construction Activities and Schedule

Construction of Phase 1 is anticipated to begin in November 2020 and take approximately 13 months to complete, concluding in December 2021. Construction of Phase 2 is anticipated to begin at the end of Phase 1 and take approximately 16 months to complete. Construction activities would occur Mondays through Friday from 7:00 a.m. to 3:00 p.m. Construction vehicle access would be available via the existing driveway at the northeastern corner of the SLRC near the intersection of Tesla Avenue and Armstrong Avenue. It is anticipated that haul trucks and construction workers would travel south to the project site from Sun Valley using Interstate 5 (I-5), then travel south on Riverside Drive to Glendale Boulevard, and then west on Lakewood Avenue to Armstrong Avenue. All construction activities would occur completely within the boundaries of the SLRC. Construction staging and laydown areas would also occur within the SLRC.

Phase 1 – Reservoir Aeration. Construction activities at each reservoir would consist of construction of the aeration header at the existing chlorination building, installation of the pre-assembled air blower enclosures for the aeration system, installation of the pipeline connections, and assembly of the diffusers. As previously discussed, the air blowers for the aeration system would be housed in a sound-insulated enclosure. Site preparation for the enclosure would include demolition of existing concrete slabs, installation of 40 polyvinyl chloride (PVC) conduits, and construction and casting of concrete and equipment pads. The concrete and equipment pads would require the site to be cleared, excavated up to three feet, and graded. The enclosure units would be installed within the existing chlorination building behind its concrete walls.

Following construction of the air blower enclosures, air pipes would be installed from the air blowers to diffuser systems at each reservoir. The pipes would be installed underground utilizing trenching and backfilling methods, with the exception of self-weighted lines that would extend within the reservoir.

Approximately 1,021 linear feet of pipeline would be required for Ivanhoe Reservoir and approximately 1,076 linear feet of pipeline would be required for Silver Lake Reservoir. As previously discussed, the diffusers would consist of a diffuser and a manifold, which would be strategically placed across the reservoirs for

optimal aeration. After installation of the pipelines and diffuser systems, the existing control panel would be moved from the existing chlorination building to the newly constructed enclosures. The air blowers and associated piping and supports and ventilation system would be installed within the enclosure. Aftercoolers would be located outside of the enclosures, and a sunshade and would be constructed to protect the equipment.

It is anticipated that approximately 1,102 cubic yards of materials would be imported to the project site, including 684 cubic yards of crushed aggregate base, 78 cubic yards of asphalt, 98 cubic yards of concrete, and 233 cubic yards of slurry. Additionally, approximately 1,045 cubic yards of materials would be excavated and exported from the project site, including 982 cubic yards of soil, 35 cubic yards of asphalt, and 28 cubic yards of concrete. Materials required for construction would be stored on site, with the exception of asphalt and concrete. Construction of Phase 1 of the proposed project would require a total of approximately 277 truck trips consisting of 101 trips for imported materials, 88 trips for exported materials, and 88 additional haul truck trips.

The estimated daily average of on-site workers would consist of a peak of 29 workers per day. Construction worker vehicle trips would account for approximately 277 roundtrips for the duration of 13 months, with an average of approximately 22 roundtrips per month.

Construction activities for Phase 1 would require approximately 10 pieces of equipment, including an asphalt paver, backhoe loader, barge, butt fusion machine, crane, front end loader, fork lift, generator, roller, and vibrating plate as well as maintenance and dump trucks. All equipment would be stored on site. The estimated daily peak number of equipment on site would be three pieces with an average of two pieces. The estimated daily peak number of trucks on-site would be six trucks during the construction of the air blowers and enclosures and four trucks during installation of the pipelines, with a daily average of three trucks on site for the entire duration of Phase 1.

Phase 2 - Recirculation System. Construction activities for Phase 2 include installation of pipeline in Ivanhoe Reservoir, installation of concrete plugs at the existing Ivanhoe Bypass and Ivanhoe Inlet tower, demolition of the existing equipment in the Gate 456 structure, installation of a suction intake on the existing Silver Lake bypass pipeline, and construction of the recirculation pump station within the Gate 456 structure, including a partition wall. Demolition would involve removal of existing electrical and mechanical equipment and an existing concrete slab within the Gate 456 structure.

Prior to installation of the concrete plugs, the water from Ivanhoe Reservoir would be pumped into Silver Lake Reservoir. Following draining of the water, 400 linear feet of pipeline would be placed and casted with concrete within Ivanhoe Reservoir to recirculate water within this reservoir. The concrete plugs would be formed on-site, placed in the Ivanhoe Bypass and then the Ivanhoe Tower Inlet, and finished with additional concrete.

The recirculation pump station equipment would be located within the Gate 456 structure adjacent to the equipment enclosures associated with the Silver Lake Regulating Station. Construction activities for the recirculation pump station would include excavation up to four feet for a 15-foot by 27-foot duct bank, construction of 40 PVC conduits, casting equipment pads and concrete slabs for a 6-foot by 3-foot sized enclosure, installation of the control system, and connecting the control panel to the equipment and pipes. The pumps would be placed below-grade within a hydraulic structure, which would be shielded from view at the property line.

Approximately 100 feet of piping would be installed within the Gate 456 structure, which would pump water from Silver Lake Reservoir over a partition wall to Ivanhoe Reservoir. Inflow from Ivanhoe Reservoir to Silver Lake Reservoir would occur via the existing weir over the Silver Lake North Dam between the reservoirs. Following installation of the piping, Ivanhoe Reservoir would be refilled via gravity through the existing Gate 456 structure.

It is anticipated that approximately 167 cubic yards of materials would be imported to the project site consisting of 21 cubic yards of crushed aggregate base, 5 cubic yards of asphalt, 141 cubic yards of concrete, and 8 cubic yards of slurry. Additionally, approximately 64 cubic yards of materials would be exported from the project site consisting of 35 cubic yards of soil, 2 cubic yards of asphalt, and 27 cubic yards of concrete. Materials required for construction, except for asphalt and concrete, would be stored on site. Construction of Phase 2 of the proposed project would require a total of approximately 81 truck trips consisting of 45 trips for imported materials, 8 trips for exported materials, and 28 additional haul truck trips.

The estimated daily peak number of on-site workers would be 22 workers. Construction worker vehicle trips would account for approximately 278 roundtrips for the duration of 16 months, with an average of approximately 18 roundtrips per month.

Construction activities for Phase 2 of the proposed project would require approximately 10 pieces of equipment, including an asphalt paver, backhoe loader, barge, butt fusion machine, crane, front end loader, fork lift, generator, roller, and vibrating plate as well as maintenance and dump trucks. All equipment would be stored on site. The estimated daily peak number of equipment on site would be 3 pieces with an average of 2 pieces. The estimated daily peak number of trucks on site would be 6 trucks with a daily average of 3 trucks on site for the entire duration of Phase 2.

Noise and Vibration Topical Information

The standard unit of measurement for noise is the decibel (dB). The human ear is not equally sensitive to sound at all frequencies. The A-weighted scale, abbreviated dBA, reflects the normal hearing sensitivity range of the human ear. On this scale, the range of human hearing extends from approximately 3 to 140 dBA. The noise analysis discusses sound levels in terms of Equivalent Noise Level (L_{eq}). L_{eq} is the average noise level on an energy basis for any specific time period. The L_{eq} for one hour is the energy average noise level during the hour. The average noise level is based on the energy content (acoustic energy) of the sound. L_{eq} can be thought of as the level of a continuous noise which has the same energy content as the fluctuating noise level. The equivalent noise level is expressed in units of dBA.

Noise levels decrease as the distance from the noise source to the receiver increases. Noise generated by a stationary noise source, or "point source," decreases by approximately 6 dBA over hard surfaces (e.g., reflective surfaces such as parking lots or smooth bodies of water) and 7.5 dBA over soft surfaces (e.g., absorptive surfaces such as soft dirt, grass, or scattered bushes and trees) for each doubling of the distance. For example, if a noise source produces a noise level of 89 dBA at a reference distance of 50 feet, then the noise level is 83 dBA at a distance of 100 feet from the noise source, 77 dBA at a distance of 200 feet over a hard surface.

Noise generated by a mobile source decreases by approximately 3 dBA over hard surfaces and 4.8 dBA over soft surfaces for each doubling of the distance. Generally, noise is most audible when the source is in a direct line-of-sight of the receiver. Barriers, such as walls, berms, or buildings that break the line-of-sight between the source and the receiver greatly reduce noise levels from the source since sound can only reach the receiver by bending over the top of the barrier. However, if a barrier is not sufficiently high or long to break the line-of-sight from the source to the receiver, its effectiveness is greatly reduced.

Studies have shown that the smallest perceptible change in sound level for a person with normal hearing sensitivity is approximately 3 dBA. A change of at least 5 dBA would be noticeable and may evoke a community reaction. A 10-dBA increase is subjectively heard as a doubling in loudness and would likely cause a negative community reaction.

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration can be a serious concern, causing buildings to shake and rumbling sounds to be heard. In contrast to noise, vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of vibration are trains, buses on rough roads, and construction activities, such as rock blasting, pile driving, and heavy earth-moving equipment. High levels of vibration may cause physical personal injury or damage to buildings. However, vibration levels rarely affect human health. Instead, most people consider vibration to be an annoyance that may affect concentration or disturb sleep. In addition, high levels of vibration may damage fragile buildings or interfere with equipment that is highly sensitive to vibration (e.g., electron microscopes).

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings and is usually measured in inches per second. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (VdB) is commonly used to measure RMS. The VdB acts to compress the range of numbers required to describe vibration.[1]

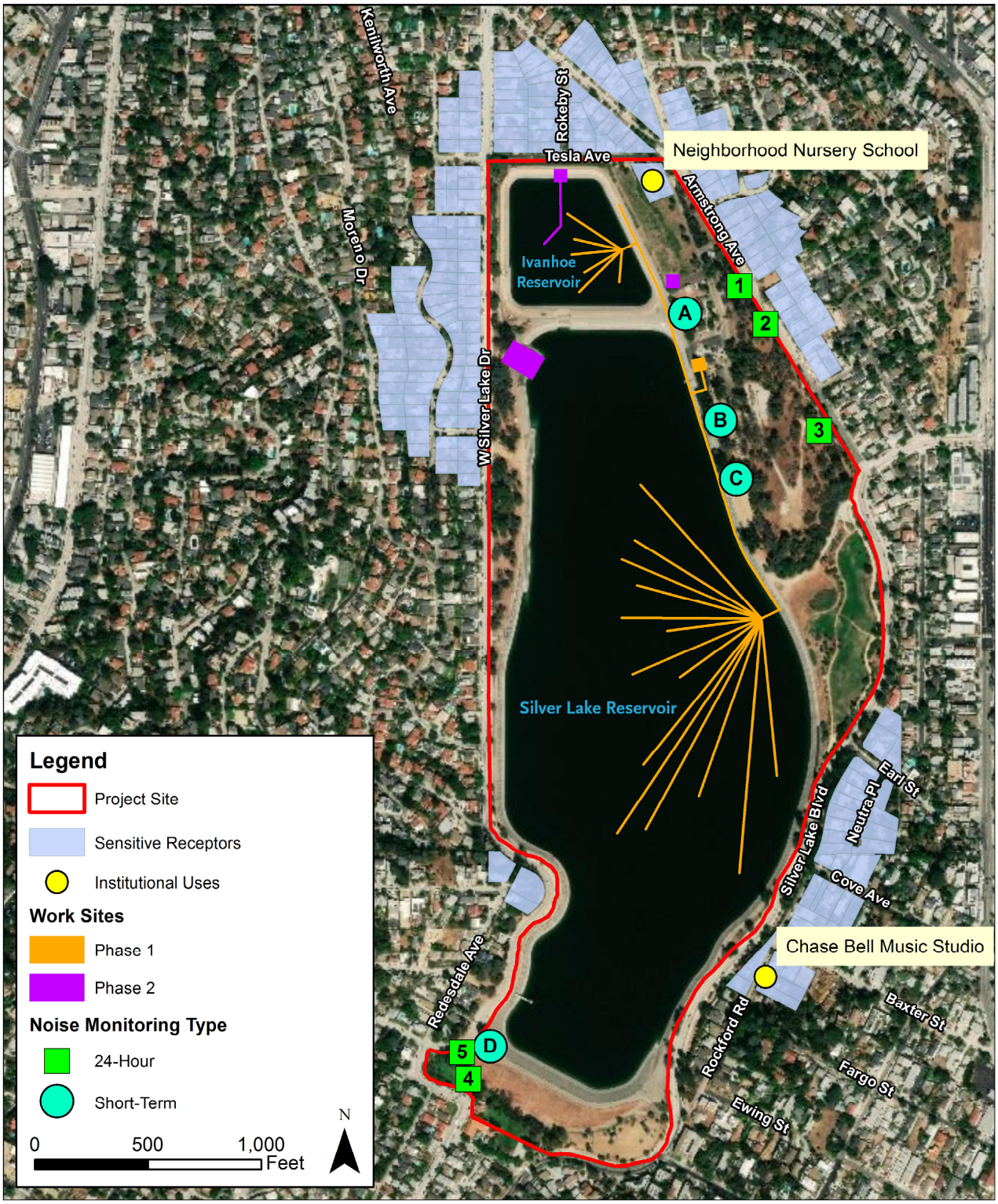
Existing Setting

The area surrounding the SLRC is characterized by low-rise single and multi-family residential structures with various commercial uses located along busier roadways in the neighborhood. As shown in Figure 5, sensitive receptors are located within 500 feet of proposed construction activities. Sensitive receptors include residences, Neighborhood Nursery School, and Chase Bell Music Studio.

LADWP, with support from Environmental Science Associates, conducted a sound level survey at Silver Lake Reservoir in anticipation of planned equipment installation activities within the reservoir. Noise measurements were taken at nine locations. Four of the meter locations (A through D) were in the immediate vicinity of the planned locations for the pump station (two separate locations), compressor unit, and mobile office trailers. Five of the meter locations were along the perimeter of the reservoir, all with direct lines of sight to the areas with planned construction activities. Residential houses were located across the street from the meter locations, at distances of approximately 35 feet. Noise monitoring locations and sensitive receptors are shown in **Figure 4**.

Weekday noise measurements for Sites 1 through 5, as shown in **Table 1**, were taken on Thursday, October 19, 2017, Tuesday, October 24, 2017, and Thursday, October 26, 2017 over a 24-hour period. Weekend measurements for Sites 1 through 5, are shown in **Table 2**, were taken on Saturday October 28, 2017 for two four-hour periods. Measurements for sites A through D, are shown in **Table 3**, were taken on Thursday, October 19, 2017, Tuesday, October 24, 2017, and Thursday, October 26, 2017.

[1] FTA, *Transit Noise and Vibration Impact Assessment*, September 2018.



Source: TAHA, 2020.

taha environmental planners
TAHA 2018-034

Silver Lake and Ivanhow Reservoirs System Project
Noise & Vibration Study

LOS ANGELES DEPARTMENT OF WATER AND POWER

FIGURE 4

NOISE MONITORING LOCATIONS AND SENSITIVE RECEPTORS

TABLE 1: EXISTING AMBIENT NOISE LEVELS (WEEKDAY) PROJECT PERIMETER

Time Period	Hourly Noise Level (dBA, L_{eq})				
	Site 1	Site 2	Site 3	Site 4	Site 5
12:00 a.m. to 1:00 a.m.	66.1	50.8	48.6	46.3	47.8
1:00 a.m. to 2:00 a.m.	61.0	43.5	46.8	45.5	46.5
2:00 a.m. to 3:00 a.m.	59.4	42.2	45.0	43.7	56.5
3:00 a.m. to 4:00 a.m.	59.9	48.5	47.7	42.6	40.5
4:00 a.m. to 5:00 a.m.	59.9	42.9	44.3	49.1	40.6
5:00 a.m. to 6:00 a.m.	63.0	50.5	50.8	50.3	47.6
6:00 a.m. to 7:00 a.m.	55.2	52.4	54.1	54.6	53.7
7:00 a.m. to 8:00 a.m.	60.0	56.9	55.8	59.2	54.0
8:00 a.m. to 9:00 a.m.	60.3	57.3	55.6	59.5	56.3
9:00 a.m. to 10:00 a.m.	59.2	56.4	53.0	58.7	58.5
10:00 a.m. to 11:00 a.m.	58.0	55.0	53.0	57.2	70.2
11:00 a.m. to 12:00 p.m.	58.7	55.3	52.0	55.8	53.7
12:00 p.m. to 1:00 p.m.	59.8	56.0	52.7	57.6	53.5
1:00 p.m. to 2:00 p.m.	59.7	55.4	51.8	55.5	53.4
2:00 p.m. to 3:00 p.m.	60.0	56.3	52.9	58.6	54.9
3:00 p.m. to 4:00 p.m.	60.9	56.7	52.7	55.9	54.9
4:00 p.m. to 5:00 p.m.	62.3	58.3	53.1	56.7	53.9
5:00 p.m. to 6:00 p.m.	62.9	58.7	54.7	57.4	54.1
6:00 p.m. to 7:00 p.m.	61.8	58.1	54.5	57.9	53.5
7:00 p.m. to 8:00 p.m.	59.3	55.3	53.0	56.5	52.3
8:00 p.m. to 9:00 p.m.	58.8	54.7	52.8	54.9	53.2
9:00 p.m. to 10:00 p.m.	56.2	52.4	51.3	53.9	51.7
10:00 p.m. to 11:00 p.m.	57.0	52.6	52.3	54.1	50.3
11:00 p.m. to 12:00 a.m.	59.0	58.4	50.5	50.8	48.9

SOURCE: LADWP, *Silverlake Baseline Sound Level Survey*, January 2018.

TABLE 2: EXISTING AMBIENT NOISE LEVELS (WEEKEND) PROJECT PERIMETER

Time Period	Hourly Noise Level (dBA, Leq)				
	Site 1	Site 2	Site 3	Site 4	Site 5
12:00 a.m. to 1:00 a.m.	66.1	50.8	48.6	46.3	47.8
1:00 a.m. to 2:00 a.m.	61.0	43.5	46.8	45.5	46.5
2:00 a.m. to 3:00 a.m.	59.4	42.2	45.0	43.7	56.5
3:00 a.m. to 4:00 a.m.	59.9	48.5	47.7	42.6	40.5
4:00 a.m. to 5:00 a.m.	59.9	42.9	44.3	49.1	40.6
5:00 a.m. to 6:00 a.m.	46.0	43.7	46.1	44.9	45.4
6:00 a.m. to 7:00 a.m.	48.3	45.8	48.2	46.6	48.2
7:00 a.m. to 8:00 a.m.	56.6	53.9	54.2	51.1	53.3
8:00 a.m. to 9:00 a.m.	56.8	54.3	52.7	-	55.0
9:00 a.m. to 10:00 a.m.	59.3	55.9	54.2	-	60.7
10:00 a.m. to 11:00 a.m.	-	-	-	-	-
11:00 a.m. to 12:00 p.m.	-	-	-	-	-
12:00 p.m. to 1:00 p.m.	-	-	-	-	-
1:00 p.m. to 2:00 p.m.	-	-	-	-	-
2:00 p.m. to 3:00 p.m.	-	-	-	-	-
3:00 p.m. to 4:00 p.m.	-	-	-	-	-
4:00 p.m. to 5:00 p.m.	-	-	-	-	-
5:00 p.m. to 6:00 p.m.	-	-	-	-	-
6:00 p.m. to 7:00 p.m.	59.5	56.5	53.9	51.9	55.9
7:00 p.m. to 8:00 p.m.	57.6	54.5	54.9	50.4	53.7
8:00 p.m. to 9:00 p.m.	58.1	56.5	53.7	52.1	54.7
9:00 p.m. to 10:00 p.m.	54.7	52.6	52.8	51.4	55.0
10:00 p.m. to 11:00 p.m.	59.5	56.5	53.9	51.9	55.9
11:00 p.m. to 12:00 a.m.	57.6	54.5	54.9	50.4	53.7

- Data not collected
SOURCE: LADWP, *Silverlake Baseline Sound Level Survey*, January 2018.

TABLE 3: EXISTING AMBIENT NOISE LEVELS (WEEKDAY) PROJECT SITE

Time Period	Hourly Noise Level (dBA, Leq)			
	Site A	Site B	Site C	Site D
Daytime Range (7:00 a.m. to 10:00 p.m.)	47.4 to 48.8	43.8 to 62.1	45.1 to 64.2	50.6 to 55.7
Nighttime Range (10:00 p.m. to 7:00 a.m.	49.1 to 66.4	51.7 to 53.5	45.3 to 50.9	46.3 to 53.0

SOURCE: LADWP, *Silverlake Baseline Sound Level Survey*, January 2018.

Regulatory Framework

Noise

Federal. The Noise Control Act of 1972 established programs and guidelines to identify and address the effects of noise on public health, welfare, and the environment. In 1981, the United States Environmental Protection Agency (USEPA) determined that subjective issues such as noise would be better addressed at local levels of government, thereby allowing more individualized control for specific issues by designated federal, state, and local government agencies. Consequently, in 1982, responsibilities for regulating noise control policies were transferred to specific federal agencies, and state and local governments. However, noise control guidelines and regulations contained in the USEPA rulings in prior years remain in place.

State. The State of California has adopted noise standards in areas of regulation not preempted by the federal government. State standards regulate noise levels of motor vehicles, sound transmission through buildings, occupational noise control, and noise insulation. State regulations governing noise levels generated by individual motor vehicles and occupational noise control are not applicable to planning efforts, nor are these areas typically subject to CEQA analysis.

Local. The City of Los Angeles has established policies and regulations concerning the generation and control of noise that could adversely affect its citizens and noise-sensitive land uses. Regarding construction, Los Angeles Municipal Code (LAMC) Section 41.40 (Noise Due to Construction, Excavation Work – When Prohibited) states that no construction or repair work shall be performed between the hours of 9:00 p.m. and 7:00 a.m. on Monday through Friday since such activities would generate loud noises and disturb persons occupying sleeping quarters in any adjacent dwelling, hotel, apartment, or other place of residence. Further, no person, other than an individual home owner engaged in the repair or construction of his/her single-family dwelling, shall perform any construction or repair work of any kind or perform such work within 500 feet of land so occupied before 8:00 a.m. or after 6:00 p.m. on any Saturday, nor at any time on any Sunday or on a federal holiday.

Chapter XI (Noise Regulation) of the LAMC addresses sources of noise other than construction activities. Chapter XI is intended to prohibit unnecessary, excessive and annoying noises from all sources within the City. A noise level increase from certain regulated noise sources of 5 dBA over the existing or presumed ambient noise level at an adjacent property line is considered a violation of the Noise Regulations. The 5-dBA increase above ambient is applicable to City-regulated noise sources (e.g., mechanical equipment – LAMC Section 112.02), and it is applicable any time of the day.

LAMC Section 112.02 (Air Conditioning, Refrigeration, Heating, Pumping, Filtering Equipment) requires that any heating, ventilation, and air conditioning (HVAC) system within any zone of the City not cause an increase in ambient noise levels on any other occupied property or if a condominium, apartment house, duplex, or attached business, within any adjoining unit to exceed the ambient noise level by more than 5 dBA.

LAMC Section 112.04 (Powered Equipment Intended for Repetitive Use in Residential Areas and Other Machinery, Equipment, and Devices) specifies that no person shall operate any lawn mower, backpack blower, lawn edger, riding tractor, or any other machinery, equipment, or other mechanical or electrical device, or any hand tool which creates a loud, raucous or impulsive sound, within any residential zone or within 500 feet of a residence between the hours of 10:00 p.m. and. 7:00 a.m. of the following day.

LAMC Section 112.05 (Maximum Noise Level of Powered Equipment or Powered Hand Tools) specifies the maximum noise level of powered equipment or powered hand tools. Any powered equipment or hand tool that produces a maximum noise level exceeding 75 dBA at a distance of 50 feet is prohibited. However, this noise limitation does not apply where compliance is technically infeasible. Technically infeasible means the above

noise limitation cannot be met despite the use of mufflers, shields, sound barriers and/or any other noise-reduction device or techniques during the operation of equipment.

LAMC Section 116.01 (Loud, Unnecessary, and Unusual Noise) states that it shall be unlawful for any person to willfully make or continue, or cause to be made or continued, any loud, unnecessary, and unusual noise which disturbs the peace or quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area.

Vibration

The City has not established significance thresholds related to vibration. In the absence of City thresholds, Federal Transit Administration (FTA) guidance may be used to assess the potential for vibration-related damage and annoyance.[2] For damage, the impact criteria are established based on the structural foundation of the potentially impacted building. Site visits indicate that the buildings near the project site are constructed with non-engineered timber and masonry. Vibration levels that exceed a PPV of 0.3 inches per second could potentially damage these types of buildings. The most stringent annoyance criteria related to annoyance is 65 VdB for buildings subject to frequent vibration events (e.g., multiple equipment passbys). The frequent event annoyance criteria for residences and institutional land uses with primarily daytime use are 72 VdB and 75 VdB, respectively.

Significance Thresholds

Noise

This Assessment was undertaken to determine whether construction or operation of the proposed project would have the potential to result in significant environmental impacts related to noise or vibration in the context of the Appendix G Environmental Checklist criteria of the CEQA Guidelines. Implementation of the proposed project may result in a significant environmental impact related to noise and vibration if the proposed project would result in:

a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
b) Generation of excessive ground-borne vibration or ground-borne noise levels; and/or
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.

The proposed project would exceed the local standards and substantially increase temporary construction noise levels if construction activities would occur within 500 feet of a noise-sensitive use and outside the hours allowed in the LAMC. The allowable hours of construction in the LAMC include 7:00 a.m. to 9:00 p.m. Monday through Friday and 8:00 a.m. to 6:00 p.m. on Saturday. In addition, the LAMC states that equipment noise levels should not exceed 75 dBA L_{eq} at 50 feet unless technically infeasible. For permanent operational noise, a significant impact would result if the proposed project would increase noise levels at sensitive receptors by 5 dBA.

[2] FTA, *Transit Noise and Vibration Impact Assessment*, September 2018.

Vibration

The construction-related vibration analysis considers the potential for building damage and annoyance. Maximum vibration levels were assessed based frequent vibration events happening more than 70 times in one day, which would be consistent with the movement of construction equipment. The proposed project would result in a significant construction or operational vibration impact if:

- Vibration levels would exceed 0.2 inches per second at non-historic structures.
- Vibration levels would exceed 72 VdB at residences and building where people sleep; and/or
- Vibration levels would exceed 65 VdB at sensitive buildings, such as recording studios.

Methodology

Noise

The noise and vibration analysis consider construction and operational sources. Noise levels associated with typical construction equipment were obtained from the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM).[3] This model predicts noise from construction based on a compilation of empirical data and the application of acoustical propagation formulas. Maximum equipment noise levels were adjusted based on anticipated percent of use. Combined construction activity noise levels were estimated by combining anticipated equipment for each activity using RCNM. The projected noise level during the construction period at receptors was calculated by (1) making a distance adjustment to the construction source sound level and (2) logarithmically adding the adjusted construction noise source level to the ambient noise level.

According to Caltrans guidance, air temperature and humidity affect molecular absorption differently depending on the frequency spectrum and can vary significantly over long distances in a complex manner. Molecular absorption in air also reduces noise levels with distance. According to Caltrans, this process only accounts for about 1 dBA per 1,000 feet, which is an inaudible and negligible difference in noise levels. Noise levels have been estimated using a decrease of 6 dBA over hard surfaces for each doubling of the distance. The methodology and formulas obtained from the Caltrans Technical Noise Supplement can be viewed below.

$$(1)\ \text{Noise Distance Attenuation Formula: } dBA_2 = dBA_1 + C \times LOG_{10}\,(D_1/D_2)$$

Where:

dBA_1 = *Noise level at the reference distance of 50 feet*

dBA_2 = *Noise level at the receptor*

C = Coefficient for hard ground or soft ground

Hard ground C = 20

Soft ground C = 25

D_1 = *Reference distance (50 feet)*

D_2 = *Distance from source to receptor (measured distance)*

[3]FHWA, *Roadway Construction Noise Model*, Version 1.1, August 2008.

(2) Logarithmic Noise Level Addition Formula: $Ns = 10*LOG_{10}((10^{\wedge}(N1/10))+(10^{\wedge}(N2/10)))$

Where:

Ns = Noise level Sum

N1 = Noise level one

N2 = Noise level two

Vibration

Vibration levels were estimated using example vibration levels and propagation formulas provided by FTA.[4] The methodology and formulas obtained from the FTA Transit Noise and Vibration Assessment guidance can be viewed below. Vibration damage is assessed using formula (3) and vibration annoyance is assessed using formula (4).

(3) *Vibration Damage Attenuation Formula: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$*

Where:

PPV_{equip} = Peak particles velocity in inches per second of the equipment adjusted for distance

PPV_{ref} = Reference vibration level in inches per second at 25 feet

D = Distance from the equipment to the receptor in feet

(4) *Vibration Annoyance Attenuation Formula: $Lv_{equip} = Lv_{ref} - 30 \times LOG\ (D/25)$*

Where:

Lv_{equip} = Vibration level in vibration decibels of equipment adjusted for distance

Lv_{ref} = Reference vibration level in vibration decibels at 25 feet

D = Distance from the equipment to the receptor in feet

Impact Assessment

a) Would the proposed project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? (Less-than-Significant Impact)

Construction

Noise impacts from construction of the proposed project would fluctuate depending on the construction phase, equipment type and duration of use, distance between the noise source and receptor, and presence or absence of noise attenuation barriers. Construction activities typically require the use of numerous pieces of noise-generating equipment. Typical noise levels from various types of equipment that would be used during construction are listed in **Table 4**. Noise levels from individual pieces of equipment typically are between 71.0 and 79.4 dBA L_{eq} at 50 feet.

[4]FTA, *Transit Noise and Vibration Impact Assessment*, May 2006.

TABLE 4: NOISE LEVEL RANGES OF TYPICAL CONSTRUCTION EQUIPMENT	
Construction Equipment	**Noise Level at 50 feet (dBA)**
Barge	75.0
Backhoe	73.6
Crane	72.6
Dump Truck	72.5
Front End Loader	75.4
Generator	77.6
Gradall	79.4
Paver	74.2
Pickup Truck	71.0
Roller	73.0
Compactor (vibrating plate)	76.2
SOURCE: Federal Highway Administration, *Roadway Construction Noise Model*, Version 1.1, 2008.	

To more accurately characterize construction-period noise levels, the noise levels shown in **Table 5** take into account the likelihood that multiple pieces of construction equipment would be operating simultaneously and the typical overall noise levels that would be expected. Equipment utilized during both Phases 1 and 2 would be similar and therefore the combined noise levels would be representative of each phase. When considered as an entire process with multiple pieces of equipment, on-land construction would generate the loudest noise level of approximately 82.2 dBA L_{eq} at 50 feet. Barge construction activities would generate a noise level of approximately 81.4 dBA L_{eq} at 50 feet.

TABLE 5: PHASED CONSTRUCTION NOISE LEVELS	
Construction Method	**Noise Level at 50 feet (dBA, L_{eq})**
SITE PREPARATION	
Backhoe	73.6
Paver	74.2
Compactor (vibrating plate)	76.2
Site Preparation Combined	79.6
EXCAVATION/MATERIALS EXPORT	
Backhoe	73.6
Front End Loader	75.4
Dump Truck	72.5
Excavation/Materials Export Combined	78.8
ON-LAND CONSTRUCTION	
Backhoe	73.6
Gradall	79.4
Generator	77.6
On-Land Construction Combined	82.2
BARGE CONSTRUCTION	
Barge	75.0
Crane	72.6
Gradall	79.4
Barge Construction Combined	81.4
SOURCE: Federal Highway Administration, *Roadway Construction Noise Model*, Version 1.1, 2008.	

Tables 6 and **7** present the estimated noise levels at the sensitive receptors nearest to the project site for Phases 1 and 2, respectively. Construction activities would occur Monday through Friday, and workers would typically be onsite for eight hours per day from 7:00 a.m. to 3:00 p.m. No work outside of these hours, or work on weekends or national holidays, is anticipated. Construction activity would therefore comply with the allowable hours of construction in the LAMC, including 7:00 a.m. to 9:00 p.m. Monday through Friday, 8:00 a.m. to 6:00 p.m. on Saturday, and no construction activity on Sundays or federal holidays. The LAMC limits equipment noise levels to 75 dBA L_{eq} at 50 feet unless technically infeasible. Phase 2 construction activities would not generate significant noise levels. However, Phase 1 construction activities would potentially generate significant noise levels at the Neighborhood Nursery School. Therefore, without mitigation, the proposed project would result in a significant impact related to on-site construction noise.

TABLE 6: TYPICAL CONSTRUCTION NOISE LEVELS AT RECEPTORS (PHASE 1)

Sensitive Receptor	Distance (feet) /a/	Existing Noise Level (dBA) /b/	Project Noise Level (dBA)
ON-LAND CONSTRUCTION			
Neighborhood Nursery School east of the proposed one-inch air pipes	100	56.7	76.2
Residences along Armstrong Ave. east of the proposed air blower enclosure	350	56.7	65.9
Residences along Armstrong Ave. east of the proposed one-inch air pipes	450	56.7	64.0
BARGE CONSTRUCTION			
Residences along Tesla Avenue north of proposed one-inch air pipes in Ivanhoe Reservoir	280	56.7	66.9
Neighborhood Nursery School east of the proposed one-inch air pipes in Ivanhoe Reservoir	250	56.7	67.8
Residences along Silver Lake Blvd. between Earl St. and Baxter St. east of the proposed one-inch air pipes in Silver Lake Reservoir	350	57.2	65.2
Residences along Silver Lake Dr. to the west of the proposed one-inch air pipes in Silver Lake Reservoir	400	57.2	64.3
Residences along Armstrong Ave. to the east of the proposed one-inch air pipes in Ivanhoe Reservoir	500	56.7	62.7
Chase Bell Music Studio south of the proposed one-inch air pipes in Ivanhoe Reservoir /c/	500	57.2	60.1

/a/ Measured from the work area to the nearest property boundary.
/b/ The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.
/c/ Includes a 4.5 dB reduction for intervening rows of buildings.
SOURCE: TAHA, 2020.

TABLE 7: TYPICAL CONSTRUCTION NOISE LEVELS AT RECEPTORS (PHASE 2)

Sensitive Receptor	Distance (feet) /a/	Existing Noise Level (dBA) /b/	Noise Level at Sensitive Receptor (dBA)
ON-LAND CONSTRUCTION			
Residences along Silver Lake Dr. to the west of the proposed recirculation pump	120	57.2	74.7
Residences along Kenilworth Ave. to the west of the proposed recirculation pump	250	57.2	64.6
Neighborhood Nursery School north of the proposed Ivanhoe Bypass Pipeline Plug	330	56.7	66.3
Residences along Armstrong Ave. to the east of the proposed Ivanhoe Bypass Pipeline Plug	290	56.7	67.3
BARGE CONSTRUCTION			
Residences along Tesla Avenue to the north of the proposed Ivanhoe Inlet Tower Plug	120	56.7	73.9
Residences along Silver Lake Dr. to the west of the proposed recirculation piping in Ivanhoe Reservoir	300	57.2	66.4
Residences along Armstrong Ave. to the east of the proposed recirculation piping in Ivanhoe Reservoir	370	56.7	64.8
Residences along Silver Lake Dr. to the west of the proposed recirculation piping in Ivanhoe Reservoir	500	57.2	62.8

/a/ Measured from the work area to the nearest property boundary.
/b/ The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.
SOURCE: TAHA, 2020.

In addition to on-site construction activities, noise would be generated off-site by construction-related trucks. Construction of Phase 1 of the proposed project would require a total of approximately 277 truck trips consisting of 101 trips for imported materials, 88 trips for exported materials, and 88 additional haul truck trips. Construction of Phase 2 of the proposed project would require a total of approximately 81 truck trips consisting of 45 trips for imported materials, 8 trips for exported materials, and 28 additional haul truck trips. Daily truck trips are not anticipated to be more than 10 trips per day. It is anticipated that haul trucks and construction workers would travel south to the project site from Sun Valley using Interstate 5, then travel south on Riverside Drive to Glendale Boulevard, and then west on Lakewood Avenue to Armstrong Avenue. A doubling of traffic volume is typically needed to audibly increase noise levels along a roadway segment. According to the City of Los Angeles Department of Transportation, Glendale Boulevard experiences approximately 31,912 vehicle trips a day.[5] Lakewood Boulevard experiences approximately 2,067 vehicle trips a day.[6] An additional 10 truck trips per day would not double the volume on any roadway segment. It is not anticipated that off-site vehicle activity would audibly change average daily noise levels due to the low volume of haul truck trips per day. The proposed project would not result in a short-term and temporary noise impact from construction trucks.

[5]City of Los Angeles Department of Transportation, *24 Hours Traffic Volume Glendale Boulevard at Fletcher Drive*, October 8, 2014.
[6]City of Los Angeles Department of Transportation, *24 Hours Traffic Volume Lakewood Avenue at Angus Street*, October 3, 2013.

Operations

Sources of operational noise include air blowers system and pumps. The bubble plume aeration system and recirculation pipe system are passive non-noise generating project components and have not been assessed further. The air blower system would be housed in an enclosure with ventilation and sound insulation. The air blower package enclosure would be located inside an existing chlorination building in the northeast portion of the SLRC between the two reservoirs The aftercoolers would be located adjacent to the existing chlorination building behind a concrete wall, and would remove excess heat produced by the aeration system.

One pump would be located within the Gate 456 structure and two pumps would be submerged under water. The submerged pumps have no potential to generate audible noise. Pumps would generate noise similar to a low hum and would be located in a 50-foot by 60-foot sized enclosure. All three of the pumps would be placed below-grade within a hydraulic structure, which would be shielded from view at the property line. Pump noise would not be audible at existing residences.

A single air blower system produces a noise level of 74.0 dBA L_{eq} at three feet. Aftercoolers would generate a noise level of approximately 75.0 dBA at three feet. Two air blowers would be operating continuously at anytime with two additional air blowers as backups. Equipment noise related to the two air blower systems and the aftercooler system operating in tandem would be approximately 79.1 dBA L_{eq}. However, noise levels decrease with distance from the noise source. As such, due to the distance of the equipment, noise levels at the sensitive receptors would decrease to a point that they would be similar to existing conditions. **Table 8** shows mechanical equipment noise levels at the nearest sensitive land uses. Project related equipment noise would result in an increase in noise that would be less than 1.0 dBA. This would be in compliance with the requirements of LAMC Section 112.02, which prohibits noise from air conditioning, refrigeration, heating, pumping, and filtering equipment from exceeding the ambient noise level on the premises of other occupied properties by more than five dB. Therefore, the proposed project would result in a less-than-significant impact related to stationary noise.

TABLE 8: AIR BLOWER SYSTEM NOISE LEVEL

Sensitive Receptor	Distance (feet)	Existing Ambient (dBA, L_{eq}) /a/	Project Noise Level (dBA, L_{eq})	Existing + Project Noise Level (dBA L_{eq})	Increase (dBA, L_{eq})	Exceed LAMC 5 dB Threshold?
Residences to the east along Armstrong Ave.	350	53.5	27.5	53.5	0.0	No
Neighborhood Nursey School to the north	750	53.5	19.2	53.5	0.0	No
Residences to the north along Tesla Dr.	960	53.5	16.5	53.5	0.0	No
Residences to the west along Silver Lake Dr.	980	52.5	16.3	52.5	0.0	No
Residences to the south along Silver Lake Blvd.	1,500	52.5	11.7	52.5	0.0	No

/a/ Average noise level in dBA L_{eq} over 24-hour period.
SOURCE: TAHA, 2020.

Periodic maintenance activities may be required to for maintenance of the aeration and recirculation system. vehicle trips related to periodic maintenance would be infrequent and would not audibly change existing noise levels. Furthermore, any equipment and activity would be required to comply with the provisions of LAMC Section 112.04 (Powered Equipment Intended for Repetitive Use In Residential Areas and Other Machinery,

Equipment, and Devices). The proposed project would also be required to comply with LAMC Section 112.05 (Maximum Noise Level of Powered Equipment or Powered Hand Tools) and LAMC Section 116.01 (Loud, Unnecessary, and Unusual Noise), which would be enforced through the Los Angeles Police Department. The above analysis demonstrates that proposed project would not generate excessive noise levels that would conflict with City standards. Therefore, the proposed project would result in a less-than-significant impact related to operational noise.

Mitigation Measures

N1 Construction equipment shall be properly maintained and equipped with mufflers.

N2 Rubber-tired equipment shall be used rather than tracked equipment when feasible.

N3 Equipment shall be turned off when not in use for an excess of five minutes, except for equipment that requires idling to maintain performance.

N4 A public liaison shall be appointed for project construction will be responsible for addressing public concerns about construction activities, including excessive noise. As needed, the liaison shall determine the cause of the concern (e.g., starting too early, bad muffler) and implement measures to address the concern.

N5 Prior to initiating construction activity, LADWP shall coordinate with the site administrator for the Neighborhood Nursery School to discuss construction activities that generate high noise levels. Coordination between the site administrator and LADWP shall continue on an as-needed basis throughout the construction phase of the project to mitigate potential disruption of classroom activities.

N6 The public shall be notified in advance of the location and dates of construction hours and activities.

Significance After Mitigation

Construction. Mitigation Measures **N1** through **N6** are designed to reduce construction noise levels. The equipment mufflers associated with Mitigation Measure **N1** would reduce construction noise levels by approximately 3 dBA. Mitigation Measures **N2** through **N6**, although difficult to quantify, would also reduce and/or control construction noise levels. **Table 9** shows mitigated noise levels for the Neighborhood Nursery School, which was the only significantly impacted land use. The implementation of Mitigation Measures **N1** through **N6** would reduce noise levels at the Neighborhood Nursery School to less than 75 dBA. Therefore, the proposed project would result in a less-than-significant impact related to construction noise with mitigation incorporated.

TABLE 9: MITIGATED CONSTRUCTION NOISE LEVELS (PHASE 1)

Sensitive Receptor	Distance (feet) /a/	Existing Noise Level (dBA) /b/	Attenuation (dBA) /c/	Noise Level at Sensitive Receptor (dBA)
ON-LAND CONSTRUCTION				
Neighborhood Nursery School east of the proposed one-inch air pipes	100	56.7	3	73.3

/a/ Measured from the work area to the nearest property boundary.
/b/ The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.
/c/ Includes a 3-dB reduction for equipment mufflers.
SOURCE: TAHA, 2020.

Operations. No significant impacts have been identified related to operational noise. Therefore, no mitigation measures are required.

b) Would the proposed project result in generation of excessive ground-borne vibration or ground-borne noise levels? (Less-than-Significant Impact)

Construction

Construction activity can generate varying degrees of vibration, depending on the procedure and equipment. Operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of a construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver building(s). The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, and to slight damage at the highest levels. In most cases, the primary concern regarding construction vibration relates to damage.

Construction equipment would be most similar to a large bulldozer, which would be used on the project site and produces a PPV of 0.089 inches per second at 25 feet.[7] Construction would occur within the boundaries of the SLRC and would be located at distances greater than 25 feet from the nearest off-site structures. Vibration levels were calculated at the nearest structures to each work site. As shown in **Table 10**, construction vibration associated with the proposed project would not exceed the 0.3 inches per second damage criterion. Therefore, the proposed project would result in a less-than-significant impact related to vibration damage.

TABLE 10: CONSTRUCTION VIBRATION LEVELS AT SENSITIVE RECEPTORS (DAMAGE)

Sensitive Receptor	Distance (feet) /a/	Vibration Level (Inches/Second)	Threshold (Inches/Second)	Exceed Threshold?
PHASE 1				
Neighborhood Nursery School east of the proposed one-inch air pipes	100	0.001	0.2	No
Residences along Armstrong Ave. east of the proposed air blower enclosure	350	0.002	0.2	No
PHASE 2				
Residences along Silver Lake Dr. to the west of the proposed recirculation pump	120	0.008	0.2	No

/a/ Measured from the project site to the nearest structure.
SOURCE: TAHA, 2020.

Vibration annoyance is another concern related to construction activity. However, perceptible vibration is not typically a concern for human health and is a common occurrence within the urban environment. Special uses such as research facilities and recording studios would be potentially impacted by construction vibration annoyance due to the presences of sensitive equipment (e.g., Chase Bell Music Studio). In addition to on-site construction activities, construction trucks on the roadway network have the potential to expose vibration-sensitive land uses. Rubber-tired vehicles, including trucks, rarely generate perceptible vibration.[8] It is not anticipated that project-related trucks would generate perceptible vibration adjacent to the roadway network.

[7]FTA, *Transit Noise and Vibration Impact Assessment,* September 2018.
[8]*Ibid.*

Table 11 shows that vibration levels would not exceed the annoyance criteria. Therefore, the proposed project would result in a less-than-significant impact related to vibration annoyance.

TABLE 11: CONSTRUCTION VIBRATION LEVELS AT SENSITIVE RECEPTORS (ANNOYANCE)

Sensitive Receptor	Distance (feet) /a/	Vibration Level (VdB)	Threshold (VdB)	Exceed Threshold?
PHASE 1				
Neighborhood Nursery School east of the proposed one-inch air pipes	100	69	72	No
Residences along Armstrong Ave. east of the proposed air blower enclosure	350	53	72	No
Chase Bell Music Studio	1,600	33	65	No
PHASE 2				
Residences along Silver Lake Dr. to the west of the proposed recirculation pump	120	67	72	No

/a/ Measured from the project site to the nearest structure.
SOURCE: TAHA, 2020.

Operations

The primary sources of operational vibration would include vehicles traveling to the project site for periodic maintenance. Vehicular movements would generate similar vibration levels as existing traffic conditions. The proposed project would not introduce any significant stationary sources of vibration that would be perceptible off the project site. Therefore, operational activity associated with the proposed project would result in a less-than-significant impact related to vibration.

Mitigation Measures

No significant impacts have been identified related to construction or operational vibration. Therefore, no mitigation measures are required.

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 proposed project expose people residing or working in the project area to excessive noise levels? (No Impact)

The project site is not located within an airport land use plan or is it located two miles of a public airport or private airstrip. Therefore, no impact related to airport or airstrip noise would occur.

Mitigation Measures

No significant impacts have been identified related to the proposed project. Therefore, no mitigation measures are required.

References

California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013.

City of Los Angeles Department of Transportation, *24 Hours Traffic Volume Glendale Boulevard at Fletcher Drive*, October 8, 2014.

City of Los Angeles Department of Transportation, *24 Hours Traffic Volume Lakewood Avenue at Angus Street*, October 3, 2013.

Cowan, James P., *Handbook of Environmental Acoustics*, 1994.

Federal Highway Administration, *Roadway Construction Noise Model*, Version 1.1, 2008.

Federal Transit Administration (FTA), *Transit Noise and Vibration Impact Assessment*, September 2018.

Los Angeles Municipal Code, *Chapter XI (Noise Regulation)*, December 31, 2019.

Los Angeles Municipal Code, *Section 112.02 (Air Conditioning, Refrigeration, Heating, Pumping, Filter Equipment*, December 31, 2019.

Los Angeles Municipal Code, *Section 112.04 (Powered Equipment Intended for Repetitive Use in Residential Areas and Other Machinery, Equipment, and Devices)*, December 31, 2019.

Los Angeles Municipal Code, *Section 112.05 (Maximum Noise Level of Powered Equipment or Hand Powered Tools)*, December 31, 2019.

Los Angeles Municipal Code, *Section 116.01 (Loud, Unnecessary, and Unusual Noises)*, December 31, 2019.

Los Angeles Municipal Code, *Section 41.40 (Noise Due to Construction, Excavation Work – When Prohibited)*, December 31, 2019.

Universal Blower Pac Inc., *Model 3203-A4L3Cv2-A Qx-Series (3-Lobe) Blower*.