APPENDIX E

Air Quality Technical Study

MEMORANDUM

Date: 25 May 2021

To: Geoff Reilly, Senior Associate Environmental Planner, WRA, Inc.

From: Yilin Tian, Environmental Engineer II, Baseline Environmental Consulting

Subject: **Air Quality Technical Study, Sheila Tank Replacement Project, Pacifica, California.**

Baseline Environmental Consulting (Baseline) has prepared this technical study to evaluate the potential air quality impacts associated with the construction of the Sheila Tank Replacement Project (proposed project) located at 1141 Sheila Lane in Pacifica, California. The proposed project includes replacing an existing redwood water tank with a partially buried, prestressed concrete tank, with a capacity of 0.6 million gallons and site improvements.

This technical memorandum describes the environmental and regulatory setting relevant to the proposed project analysis, and evaluates the potential air quality impacts associated with implementation of the proposed project. This study will be used to support environmental review of the proposed project under the California Environmental Quality Act (CEQA).

ENVIRONMENTAL SETTING

The proposed project is located within the San Francisco Bay Area Air Basin (SFBAAB). Some air basins have natural characteristics that limit the ability of natural processes to either dilute or transport air pollutants. The major determinants of air pollution transport and dilution are climatic and topographic factors such as wind, atmospheric stability, terrain that influences air movement, and sunshine. Wind and terrain can combine to transport pollutants away from upwind areas, while solar energy can chemically transform pollutants in the air to create secondary photochemical pollutants such as ozone. The following discussion provides an overview of the existing air quality conditions in the SFBAAB.

Air Pollutants of Concern

The California Air Resources Board (CARB) and U.S. Environmental Protection Agency (EPA) focus on the following air pollutants as regional indicators of ambient air quality:

- Ozone
- Suspended particulate matter—both respirable (PM_{10}) and fine ($PM_{2.5}$)
- Nitrogen dioxide (NO_2)
- Carbon monoxide (CO)
- Sulfur dioxide (SO_2)

- Lead

Because these are the most prevalent air pollutants known to be harmful to human health, based on extensive criteria documents, they are referred to as "criteria air pollutants." In the SFBAAB, the primary criteria air pollutants of concern are ground-level ozone formed through reactions of oxides of nitrogen (NO_x) and reactive organic gases (ROG), PM_{10}, and $PM_{2.5}$. In addition to criteria air pollutants, local emissions of toxic air contaminants (TACs), such as diesel particulate matter (DPM), are a concern for nearby receptors. These primary air pollutants of concern are discussed further below.

Ozone

While ozone serves a beneficial purpose in the upper atmosphere (stratosphere) by reducing ultraviolet radiation, it can be harmful to the human respiratory system and to sensitive species of plants when it reaches elevated concentrations in the lower atmosphere. Ozone is not emitted directly into the environment, but is formed in the atmosphere by complex chemical reactions between ROG and NO_x in the presence of sunlight. Anthropogenic sources of ROG and NO_x include vehicle tailpipe emissions and evaporation of solvents, paints, and fuels.

Particulate Matter

PM_{10} and $PM_{2.5}$ consist of extremely small, suspended particles or droplets that are 10 microns and 2.5 microns or smaller in diameter, respectively. Some sources of particulate matter, like pollen, forest fires, and windblown dust, are naturally occurring. In populated areas, however, most particulate matter is caused by road dust, combustion by-products, abrasion of tires and brakes, and construction activities. Particulate matter can also be formed in the atmosphere by condensation of SO_2 and ROG.

Particulate matter exposure can affect breathing, aggravate existing respiratory and cardiovascular disease, alter the body's defense systems against foreign materials, and damage lung tissue, contributing to cancer and premature death. Individuals with chronic obstructive pulmonary or cardiovascular disease, asthmatics, the elderly, and children are most sensitive to the effects of particulate matter.

Toxic Air Contaminants

TACs include a diverse group of air pollutants that can adversely affect human health. Unlike criteria air pollutants, which generally affect regional air quality, TAC emissions are evaluated based on estimations of localized concentrations and risk assessments. The adverse health effects a person may experience following exposure to any chemical depend on several factors, including the amount (dose), duration, chemical form, and any simultaneous exposure to other chemicals.

For risk assessment purposes, TACs are separated into carcinogens and non-carcinogens. Carcinogens are assumed to have no safe threshold below which health impacts would not occur, and cancer risk is expressed as excess cancer cases per 1 million exposed individuals over a lifetime of exposure. Non-carcinogenic substances are generally assumed to have a safe threshold below which health impacts would not occur. Acute and chronic exposure to non-carcinogens is expressed as a hazard index (HI), which is the sum of expected exposure levels divided by the corresponding acceptable exposure levels. In the SFBAAB, adverse air quality impacts on public health from TACs are predominantly from DPM.

DPM and $PM_{2.5}$ from diesel-powered engines are a complex mixture of soot, ash particulates, metallic abrasion particles, volatile organic compounds, and other components that can contribute to a range of health problems. In 1998, CARB identified DPM from diesel-powered engines as a TAC based on its potential to cause cancer and other adverse health effects.[1] While diesel exhaust is a complex mixture that includes hundreds of individual constituents, under California regulatory guidelines, DPM is used as a surrogate measure of exposure for the mixture of chemicals that make up diesel exhaust as a whole. More than 90 percent of DPM is less than 1 micron in diameter, and thus is a subset of $PM_{2.5}$.[2] The estimated cancer risk from exposure to diesel exhaust is much higher than the risk associated with any other TAC routinely measured in the region.

Existing Sources and Levels of Local Air Pollution

In the Bay Area, stationary and mobile sources are the primary contributors of TACs and $PM_{2.5}$ emissions to local air pollution. In an effort to promote healthy infill development from an air quality perspective, the Bay Area Air Quality Management District (BAAQMD) has prepared guidance entitled *Planning Healthy Places*.[3] The purpose of this guidance document is to encourage local governments to address and minimize potential local air pollution issues early in the land-use planning process, and to provide technical tools to assist them in doing so. Based on a screening-level cumulative analysis of mobile and stationary sources in the Bay Area, the BAAQMD mapped localized areas of elevated air pollution that: 1) exceed an excess cancer risk of 100 in a million; 2) exceed $PM_{2.5}$ concentrations of 0.8 micrograms per cubic meter ($\mu g/m^3$); or 3) are located within 500 feet of a freeway, 175 feet of a major roadway (with more than 30,000 annual average daily vehicle trips), or 500 feet of a ferry terminal. Within these localized areas of elevated air pollution, the BAAQMD encourages local

[1] California Air Resources Board (CARB), 1998. Initial Statement of Reasons for Rulemaking; Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant, June.
[2] California Air Resources Board (CARB), 2016. Overview: Diesel Exhaust and Health. Available at: https://www.arb.ca.gov/research/diesel/diesel-health.htm, accessed January 13, 2017. Last updated April 12, 2016.
[3] Bay Area Air Quality Management District (BAAQMD), 2016. Planning Healthy Places; A Guidebook for Addressing Local Sources of Air Pollutants in Community Planning, May.

governments to implement best practices to reduce exposure to and emissions from local sources of air pollutants. According to the BAAQMD, elevated levels of $PM_{2.5}$ and/or TAC pollution do not currently extend across the project site.

Existing Sensitive Receptors

Sensitive receptors are individuals who are more susceptible to air-quality-related health problems compared to other members of the public, such as the very young, the old, and the infirm. Sensitive land uses are places where sensitive receptors are most likely to spend their time, such as schools, convalescent homes, and hospitals. Residential areas are also considered sensitive to poor air quality because people are often at home for extended periods, thereby increasing the duration of exposure to potential air contaminants. Parks, with outdoor exposure of congregations of people, are also considered sensitive land uses, particularly since park patrons frequently engage in strenuous activities that elevate respiration levels, increasing their susceptibility to airborne pollutants. Existing sensitive land use near the project site include single-family residential homes located adjacent to the project site.

Existing Odors

Other air quality issues of concern in the SFBAAB include nuisance impacts from odors; objectionable odors may be associated with a variety of pollutants. Odors rarely have direct health impacts, but they can be very unpleasant and lead to anger and concern over possible health effects among the public. According to the BAAQMD, the following odor sources are of particular concern: wastewater treatment plants, oil refineries, asphalt plants, chemical manufacturing, painting/coating operations, coffee roasters, food processing facilities, recycling operations and metal smelters.[4] None of these types of facilities are located in proximity to the proposed project.

REGULATORY SETTING

Federal, State, and Regional Regulations

The EPA is responsible for implementing the programs established under the federal Clean Air Act, such as establishing and reviewing the National Ambient Air Quality Standards (NAAQS) and judging the adequacy of State Implementation Plans to attain the NAAQS. A State Implementation Plan must integrate federal, State, and local plan components and regulations to identify specific measures to reduce pollution in nonattainment areas, using a combination of performance standards and market-based programs. If a state fails to enforce its implementation of approved regulations, or if the EPA determines that a State Implementation

[4] Bay Area Air Quality Management District (BAAQMD), 2017. California Environmental Quality Act Air Quality Guidelines, May.

Plan is inadequate, the EPA is required to prepare and enforce a Federal Implementation Plan to promulgate comprehensive control measures for a given State Implementation Plan.

The CARB is responsible for establishing and reviewing the California Ambient Air Quality Standards (CAAQS), developing and managing the California State Implementation Plans, identifying TACs, and overseeing the activities of regional air quality management districts. In California, mobile emissions sources (e.g., construction equipment, trucks, and automobiles) are regulated by the CARB, and stationary emissions sources (e.g., industrial facilities) are regulated by the regional air quality management districts.

The CAAQS and NAAQS, which were developed for criteria air pollutants, are intended to incorporate an adequate margin of safety to protect the public health and welfare. California also has ambient air quality standards for sulfates, visibility-reducing particles, hydrogen sulfide, and vinyl chloride. To achieve CAAQSs, criteria air pollutant emissions are managed through control measures described in regional air quality plans as well as emission limitations placed on permitted stationary sources.

In accordance with the federal Clean Air Act and California Clean Air Act, areas in California are classified as either in attainment, maintenance (i.e., former nonattainment), or nonattainment of the NAAQS and CAAQS for each criteria air pollutant. To assess the regional attainment status, the BAAQMD collects ambient air quality data from over 30 monitoring sites within the SFBAAB. Based on current monitoring data, the SFBAAB is designated as a nonattainment area for ozone, PM_{10}, and $PM_{2.5}$, and is designated an attainment or unclassified area for all other pollutants (see **Table 1**).

Table 1. Air Quality Standards and Attainment Status

Pollutant	Averaging Time	CAAQS		NAAQS	
		Concentration	Attainment Status	Concentration	Attainment Status
Ozone	8-Hour	0.070 ppm	N	0.070 ppm	N
	1-Hour	0.09 ppm	N	Revoked in 2005	---
Carbon Monoxide (CO)	8-Hour	9.0 ppm	A	9 ppm	A
	1-Hour	20 ppm	A	35 ppm	A
Nitrogen Dioxide (NO_2)	1-Hour	0.18 ppm	A	0.100 ppm	U
	Annual	0.030 ppm	---	0.053 ppm	A
Sulfur Dioxide (SO_2)	24-Hour	0.04 ppm	A	0.14 ppm	A
	1-Hour	0.25 ppm	A	0.075 ppm	A
	Annual	---	---	0.030 ppm	A
Respirable Particulate Matter (PM_{10})	Annual	20 µg/m^3	N	---	---
	24-Hour	50 µg/m^3	N	150 µg/m^3	U
Fine Particulate Matter ($PM_{2.5}$)	Annual	12 µg/m^3	N	12 µg/m^3	U/A
	24-Hour	---	---	35 µg/m^3	N
Sulfates	24-Hour	25 µg/m^3	A	---	---
Lead	30-Day	1.5 µg/m^3	A	---	---
	Calendar Quarter	---	---	1.5 µg/m^3	A
	Rolling 3-Month	---	---	0.15 µg/m^3	A
Hydrogen Sulfide	1-Hour	0.03 ppm	U	---	---
Vinyl Chloride	24-Hour	0.010 ppm	U	---	---
Visibility Reducing Particles	8 Hour (10:00 to 18:00 PST)	---	U	---	---

Notes: A = Attainment; N = Nonattainment; U = Unclassified; "---" = not applicable; ppm = parts per million; µg/m^3 = micrograms per cubic meter; PST = Pacific Standard Time.
Source: Bay Area Air Quality Management District (BAAQMD), 2017. Air Quality Standards and Attainment Status. Available at: http://www.baaqmd.gov/research-and-data/air-quality-standards-and-attainment-status. Accessed April 10, 2019. Last updated January 5, 2017.

Regulation of TACs, referred to as hazardous air pollutants (HAPs) under federal regulations, is achieved through federal, State, and local controls on individual sources. The air toxics provisions of the federal Clean Air Act require the EPA to identify HAPs that are known or

suspected to cause cancer or other serious health effects to protect public health and welfare, and to establish National Emission Standards for Hazardous Air Pollutants. California regulates TACs primarily through the Tanner Air Toxics Act (Assembly Bill [AB] 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). The Tanner Act created California's program to identify and reduce exposure to TACs. To date, the CARB has identified over 21 TACs and adopted the EPA's list of 187 HAPs as TACs. The Hot Spots Act supplements the Tanner Act by requiring a statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks.

Local Air Quality Regulations

Bay Area Air Quality Management District Responsibilities

The BAAQMD is primarily responsible for ensuring that the National Ambient Air Quality Standards (NAAQS) and the California Ambient Air Quality Standards (CAAQS) for criteria air pollutants are attained and maintained within the SFBAAB. The BAAQMD fulfills this responsibility by adopting and enforcing rules and regulations concerning air pollutant sources, issuing permits, inspecting stationary sources of air pollutants, responding to citizen complaints, and monitoring ambient air quality and meteorological conditions.

The BAAQMD's CEQA Air Quality Guidelines[5] include thresholds of significance to assist lead agencies in evaluating and mitigating air quality impacts under CEQA. The BAAQMD's thresholds established levels at which emissions of ozone precursors (ROG and NOx), PM_{10}, $PM_{2.5}$, and TACs could cause significant air quality impacts. The scientific soundness of the thresholds is supported by substantial evidence presented in the BAAQMD's Revised Draft Options and Justification Report.[6] The BAAQMD's thresholds of significance are summarized in **Table 2**.

[5] Bay Area Air Quality Management District (BAAQMD), 2017. California Environmental Quality Act Air Quality Guidelines, May.
[6] Bay Area Air Quality Management District (BAAQMD), 2009. Revised Draft Options and Justification Report; California Environmental Quality Act Thresholds of Significance, October.

Table 2. BAAQMD Project-level Thresholds of Significance

Impact Analysis	Pollutant	Threshold of Significance
Regional Air Quality (Construction)	ROG	54 pounds/day (average daily emission)
	NO_x	54 pounds/day (average daily emission)
	Exhaust PM_{10}	82 pounds/day (average daily emission)
	Exhaust $PM_{2.5}$	54 pounds/day (average daily emission)
	Fugitive dust (PM_{10} and $PM_{2.5}$)	Best management practices
Regional Air Quality (Operation)	ROG	54 pounds/day (average daily emission) 10 tons/year (maximum annual emission)
	NO_x	54 pounds/day (average daily emission) 10 tons/year (maximum annual emission)
	Exhaust PM_{10}	82 pounds/day (average daily emission) 15 tons/year (maximum annual emission)
	Exhaust $PM_{2.5}$	54 pounds/day (average daily emission) 10 tons/year (maximum annual emission)
Local Community Risks and Hazards (Operation and/or Construction)	Exhaust $PM_{2.5}$ (project)	0.3 $\mu g/m^3$ (annual average)
	TACs (project)	Cancer risk increase > 10 in one million Chronic hazard index (HI) > 1.0
	Exhaust $PM_{2.5}$ (cumulative)	0.8 $\mu g/m^3$ (annual average)
	TACs (cumulative)	Cancer risk > 100 in one million Chronic hazard index > 10.0

Notes: ROG = reactive organic gases; NO_x = oxides of nitrogen; PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter; $\mu g/m^3$ = micrograms per cubic meter; PPM = parts per million
Source: BAAQMD, 2017.

Bay Area Clean Air Plan

In accordance with the California Clean Air Act, the BAAQMD is required to prepare and update an air quality plan that outlines measures by which both stationary and mobile sources of pollutants can be controlled to achieve the NAAQS and CAAQS in areas designated as nonattainment. In April 2017, the BAAQMD adopted the *2017 Clean Air Plan: Spare the Air, Cool the Climate* (2017 CAP).[7] The 2017 CAP includes 85 control measures to reduce ozone precursors, particulate matter, TACs, and greenhouse gases. The 2017 CAP was developed based on a multi-pollutant evaluation method that incorporates well-established studies and methods of quantifying the health benefits; air quality regulations; computer modeling and analysis of existing air quality monitoring data and emissions inventories; and traffic and population growth projections prepared by the Metropolitan Transportation Commission and the Association of Bay Area Governments, respectively.

[7] Bay Area Air Quality Management District (BAAQMD), 2010. Bay Area 2010 Clean Air Plan. Adopted September 15.

City of Pacifica Draft General Plan 2014

The City of Pacifica General Plan was last updated in 1980. There was an extensive effort to update the General Plan between 2009 and 2012, but the Draft General Plan was not adopted by City Council. In early 2019, the City of Pacifica began the simultaneous process of updating its General Plan and Local Coastal Program, and developing a Specific Plan for the Sharp Park neighborhood.

The Air Quality Element of the City of Pacific Draft General Plan 2014[8] contain the following policies and programs that are applicable to the proposed project:

CO-G-14 Improve Air Quality. Reduce emissions of ozone-producing pollutants and particulate matter to improve regional air quality and protect the health of Pacifica and Bay Area residents.

CO-I-54 Regional Cooperation. Cooperate with the Bay Area Air Quality Management District (BAAQMD) and other public agencies in implementing plans to achieve State and Federal Ambient Air Quality Standards.

CO-I-55 Impact Guidelines. Use the BAAQMD's *Air Quality Guidelines*, to determine and mitigate project air quality impacts.

The City consults with the BAAQMD during CEQA review for projects that require air quality impact analysis and BAAQMD is on the distribution list for CEQA documents.

CO-I-56 Sensitive Receptors. Work with BAAQMD to develop and implement a Community Risk Reduction Plan to address the exposure of sensitive populations to toxic air contaminant emissions in Pacifica.

CO-I-57 Construction Equipment. Require all construction equipment to be maintained and tuned to meet appropriate EPA and CARB emission requirements.

CO-I-58 Dust Abatement. Require contractors to use best management practices (BMPs) to reduce particulate emissions and dust associated with construction activities.

BMPs include, but are not limited to: regular materials and vehicle tire watering; covering of stockpiles; phasing or extension of grading operations; suspension of grading during high wind periods; and revegetation of graded areas.

CO-I-59 Transportation Control Measures. Ensure compliance with the most current Bay Area Clean Air Plan by implementing the Plan's recommended Transportation Control Measures. The

[8] City of Pacifica, 2014. City of Pacifica: Draft General Plan 2014. March

2010 Clean Air Plan identifies 17 TCMs aimed at reducing vehicle trips and vehicle miles traveled; increasing access to and support of alternative modes of transportation; promoting compact, walkable land use patterns; and increasing public education and awareness.

TECHNICAL ANALYSIS

Approach to Analysis

The analysis potential project impacts related to air quality was prepared in accordance with the BAAQMD CEQA Air Quality Guidelines.[9] The project's estimated emissions and/or health risks associated with ROG, NO_x, PM_{10}, $PM_{2.5}$, and TACs were compared to the BAAQMND's thresholds of significance (see **Table 2)**.

Analysis and Findings

Consistency with the Bay Area Clean Air Plan

Based on the BAAQMD's current CEQA Air Quality Guidelines[10], the following criteria should be considered to determine if a project would conflict with or obstruct implementation of the 2017 CAP:

- Does the project include applicable control measures from the air quality plan?
- Does the project disrupt or hinder implementation of any air quality plan control measures?
- Does the project support the primary goals of the air quality plan?

The 2017 CAP includes control measures that aim to reduce air pollution and GHGs from stationary, area, and mobile sources. The control measures are organized into nine categories: stationary sources, transportation, energy, buildings, agriculture, natural and working lands, waste management, water, and super-GHG pollutants (e.g., methane, black carbon, and fluorinated gases).

As described in **Table 3**, the project would be consistent with applicable control measures from the 2017 CAP.

[9] Bay Area Air Quality Management District (BAAQMD). 2017. California Environmental Quality Act Air Quality Guidelines. May.
[10] Bay Area Air Quality Management District (BAAQMD). 2017. California Environmental Quality Act Air Quality Guidelines. May.

Table 3. Project Consistency with Bay Area Air Quality Management District (BAAQMD) 2017 Clean Air Plan (CAP)

Control Measures	Proposed Project Consistency
Stationary Sources	The stationary source measures are enforced by the BAAQMD pursuant to its authority to control emissions from permitted facilities. The project would not include any new stationary sources, such as an emergency diesel generator. Therefore, the stationary sources control measures of the 2017 CAP are not applicable to the project.
Transportation	The transportation control measures are designed to reduce vehicle trips, use, miles traveled, idling, or traffic congestion for the purpose of reducing vehicle emissions. The project operation would not generate any additional vehicle trips compared to the existing conditions. Therefore, the project would be consistent with the transportation control measures of the 2017 CAP.
Energy	The energy control measures are designed to reduce emissions of criteria air pollutants, toxic air contaminants (TACs), and greenhouse gases (GHGs) by decreasing the amount of electricity consumed in the Bay Area, as well as decreasing the carbon intensity of the electricity used by switching to less GHG-intensive fuel sources for electricity generation. Since these measures apply to electrical utility providers and local government agencies (and not individual projects), the energy control measures of the 2017 CAP are not applicable to the project. Furthermore, project operation would require minimal consumption of electricity during tank inspection and cleaning (once every five to 10 years and after major seismic events).[11] Therefore, the energy control measures of the 2017 CAP are not applicable to the project.
Buildings	The BAAQMD has authority to regulate emissions from certain sources in buildings such as boilers and water heaters, but has limited authority to regulate buildings themselves. Therefore, the building control measures focus on working with local governments that have authority over local building codes to facilitate adoption of best GHG control practices and policies. The proposed project does not include construction of new buildings. Therefore, the building control measures of the 2017 CAP are not applicable to the project.
Agriculture	The agriculture control measures are designed primarily to reduce emissions of methane. Since the project does not include any agricultural activities, the agriculture control measures of the 2017 CAP are not applicable to the project.
Natural and Working Lands	The control measures for the natural and working lands sector focus on increasing carbon sequestration on rangelands and wetlands, as well as encouraging local governments to adopt ordinances that promote urban tree plantings. Since the project does not include the disturbance of any rangelands or wetlands, the natural and working lands control measures of the 2017 CAP are not applicable to the project.

[11] Baseline Environmental Consulting, 2021. Email: NCCWD Sheila Tank Project - request for information; from: Kaitlyn Konecny; to: Ivy Tao. February 24.

Control Measures	Proposed Project Consistency
Waste Management	The waste management measures focus on reducing or capturing methane emissions from landfills and composting facilities, diverting organic materials away from landfills, and increasing waste diversion rates through efforts to reduce, reuse, and recycle. The project would generate minimal amount of waste from tank cleaning every five to ten years. Therefore, the waste management measures are not applicable to the project.
Water	The water control measures to reduce emissions from the water sector will reduce emissions of criteria pollutants, TACs, and GHGs by encouraging water conservation, limiting GHG emissions from publicly owned treatment works (POTWs), and promoting the use of biogas recovery systems. The proposed project would replace an existing water tank, which has reached the end of its useful life and is no longer viable with its current capacity, with a pre-stressed concrete water tank of higher volume to provide adequate fire flow protection and additional system-wide reliability. Because the project would improve operations of the POTW water distribution system, the proposed project would be consistent with the water control measures of the 2017 CAP.
Super GHGs	The super-GHG control measures are designed to facilitate the adoption of best GHG control practices and policies through the BAAQMD and local government agencies. Since these measures do not apply to individual projects, the super-GHG control measures of the 2017 CAP are not applicable to the project.

Source: BAAQMD, 2017b.

Criteria Air Pollutants from Construction

Construction of the project would generate criteria pollutant emissions that could potentially affect regional air quality. The primary pollutant emissions of concern would be ROG, NOx, PM_{10}, and $PM_{2.5}$ from the exhaust of off-road construction equipment and on-road construction vehicles (worker vehicles, vendor trucks, and haul trucks). In addition, fugitive dust emissions of PM_{10} and $PM_{2.5}$ would be generated by soil disturbance activities, and fugitive ROG emissions would result from paving activities.

The BAAQMD recommends using the most current version of the California Emissions Estimator Model (CalEEMod Version 2016.3.2) to estimate construction and operational emissions of pollutants resulting from a proposed project. CalEEMod uses widely accepted models for emission estimates combined with appropriate default data for a variety of land-use projects that can be used if site-specific information is not available. The primary input data used to estimate emissions associated with construction of the proposed project are provided by the project applicant and contain information on construction phase duration, and off-road construction equipment associated with each phase. A summary of the assumptions for estimating construction emissions is provided in **Table 4**. Construction information provided by the project applicant and a copy of the CalEEMod report for the proposed project, which summarizes the input parameters, assumptions, and findings, is included as **Appendix A**.

Table 4. Construction Assumptions for CalEEMod

CalEEMod Input Category	Construction Assumptions and Changes to Default Data
Construction Phase	Fourteen construction sequences provided by the application were combined into five construction phases including demolition, retaining wall and site preparation, tank construction, backfill and grading, and access road paving. The duration of each construction sequence was provided by the project applicant and is included in Appendix A.
Construction Equipment	The on-site construction equipment list was modified according to site-specific construction information provided by the project applicant (Appendix A).
Material Movement	Approximately 3,100 cubic yards of soil would be off-hauled and about 900 cubic yards of soil would be imported for the project site according to information provided by the project applicant.
Worker and Vendor Trips	The default vendor trips were modified according to information provided by the project applicant. Default worker trips for each construction phase were modified based on the weighted-average number of workers estimated for each construction sequence. Supporting calculations are provided in Appendix A.

Notes: Default CalEEMod data used for all other parameters are not described.
Source: Construction information provided by the project applicant and a copy of CalEEMod report is provided in Appendix A.

To analyze daily emission rates, the total emissions estimated during construction were averaged over the total working days (219 days) and compared to the BAAQMD's thresholds of significance. As shown in **Table 5**, the project's estimated emissions for ROG, NOx, and exhaust PM_{10} and $PM_{2.5}$ during construction were below the thresholds of significance and, therefore, would not result in a cumulatively considerable net increase in criteria air pollutants for which the region is in nonattainment.

Table 5. Estimated Construction Emissions (Pounds Per Day)

Emissions Scenario	ROG	NO_x	Exhaust PM_{10}	Exhaust $PM_{2.5}$
Construction Emissions	1.0	10.1	0.43	0.41
Thresholds of Significance	54	54	82	54
Threshold Exceedance?	**No**	**No**	**No**	**No**

Source: A copy of CalEEMod report is provided in Appendix A.

The generation of fugitive dust PM_{10} and $PM_{2.5}$ emissions from soil disturbance activities could result in a cumulatively considerable net increase in regional PM_{10} and $PM_{2.5}$ concentrations. The BAAQMD does not have a quantitative threshold of significance for fugitive dust PM_{10} and $PM_{2.5}$ emissions; however, the BAAQMD considers implementation of dust control measures during construction sufficient to reduce air quality impacts from fugitive dust to a less-than-significant level.

The City's General Plan 2014 CO-I-58 requires contractors to use best management practices to reduce particulate emissions and dust associated with construction activities. In addition, the BAAQMD recommends that all construction projects implement the Basic Construction Mitigation Measures from the BAAQMD's CEQA Guidelines:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 mph.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

Implementation of the BAAQMD's BMPs would ensure that emissions of PM_{10} and $PM_{2.5}$ from dust generated during project construction activities would not result in a cumulatively considerable net increase in criteria air pollutants for which the region is in nonattainment.

Criteria Air Pollutants from Operation

Operation of the proposed water tank and the new access road would not generate criteria pollutant emissions except for vehicular emissions from tank inspection and cleaning. Because tank inspection and cleaning would only occur once every five to ten years[12], criteria pollutant emissions from project operations would be negligible. Therefore, project operation would not result in a considerable net increase in ozone and particulate matter concentrations for which the region is non-attainment under federal and State ambient air quality standards.

[12]Baseline Environmental Consulting, 2021. Email: NCCWD Sheila Tank Project - request for information; from: Kaitlyn Konecny; to: Ivy Tao. February 24.

Localized Carbon Monoxide Concentrations

The occurrence of localized CO concentrations, also known as "hotspots," can affect sensitive receptors in local communities. The source of local CO emissions is often associated with heavy traffic congestion, which most frequently occurs at signalized intersections of high-volume roadways. The BAAQMD's threshold of significance for local CO concentrations is equivalent to the 1- and 8-hour CAAQS of 20.0 and 9.0 parts per million, respectively, because these represent levels that are protective of public health. Operation of the proposed project would include infrequent vehicle trips associated with tank inspection and cleaning once per five to ten years. According to the BAAQMD CEQA Guidelines, since operation of the proposed project would not generate more than 44,000 vehicles per hour at the affected intersections, the project would not be expected to increase local CO levels above the CAAQS.

Toxic Air Contaminants from Construction

The BAAQMD recommends evaluating a project's potential health risks to sensitive receptors within 1,000 feet of the project during project construction. Construction of the proposed project would generate DPM and $PM_{2.5}$ emissions from off-road diesel construction equipment and on-road heavy-duty diesel trucks that could potentially result in elevated health risks at nearby sensitive receptors.

The annual average concentrations of DPM and exhaust $PM_{2.5}$ during construction were estimated within 1,000 feet of the project using the EPA's Industrial Source Complex Short Term (ISCST3) air dispersion model. For this analysis, emissions of exhaust PM_{10} were used as a surrogate for DPM, which is a conservative assumption because more than 90 percent of DPM is less than 1 micron in diameter. The input parameters and assumptions used for estimating emission rates of DPM and $PM_{2.5}$ from off-road diesel construction equipment are included in **Appendix B**.

The exhaust from off-road equipment was represented in the ISCST3 model as a series of volume sources with a release height of 5 meters to represent the mid-range of the expected plume rise from frequently used construction equipment. Dispersion of air pollutants from off-road construction equipment was modeled using a unit emission rate (e.g., 1 gram per second for volume sources). The annual average concentration profiles from the air dispersion model were then scaled according to the ratio between the unit emission rate and the actual emission rate from each source. Actual emission rates for off-road equipment were based on the actual hours of work and averaged over the entire duration of construction. Daily emissions from construction were assumed to primarily occur between 7:00 AM and 3:00 PM Monday through Friday.

A uniform grid of receptors spaced 10 meters apart with receptor heights of 1.8 meter (for ground-level receptors) was placed around the project site as a means of developing isopleths (i.e., concentration contours) that illustrate the dispersion pattern from the emissions sources. The ISCST3 model input parameters included 3 years of BAAQMD meteorological data from the Fort Funston weather station located about 6.5 miles north of the project site.

Based on the results of the air dispersion model (**Appendix C**), potential off-site health risks were evaluated for the maximally exposed individual resident (MEIR) located about 75 feet to the north of the project site. It was conservatively assumed that the maximally exposed individual is on the ground floor. The location of the MEIR is shown in **Figure 1**.

It was conservatively assumed that the MEIR would be exposed to an annual average DPM concentration over the entire estimated duration of construction, which is about 0.92 years (11 months). The incremental increase in cancer risk from on-site DPM emissions during construction was assessed for a young child exposed to DPM starting from infancy in the third trimester of pregnancy. This exposure scenario represents the most sensitive individuals who could be exposed to adverse air quality conditions in the vicinity of the project site. The input parameters and results of the health risk assessment are included in **Appendix D**.

Estimates of the health risks at the MEIR from exposure to DPM and $PM_{2.5}$ concentrations during project construction are summarized and compared to the BAAQMD's thresholds of significance in **Table 6**. At the MEIR, the estimated chronic HI for DPM and annual average $PM_{2.5}$ concentration from construction emissions without control measures were below the thresholds of significance; however, the excess cancer risk exceeded the threshold of significance.

Using Tier 2 or higher engines and the most effective Verified Diesel Emission Control Strategies available (e.g., Level III diesel particulate filters) for all off-road diesel equipment above 75 horsepower would reduce the project DPM emissions and associated health risks by approximately 83 percent. Implementation of this emission control measure would reduce the excess cancer risk at the MEIR below the threshold of significance, as shown in **Table 6**.

Figure 1. Location of Maximally Exposed Individual Resident (MEIR)

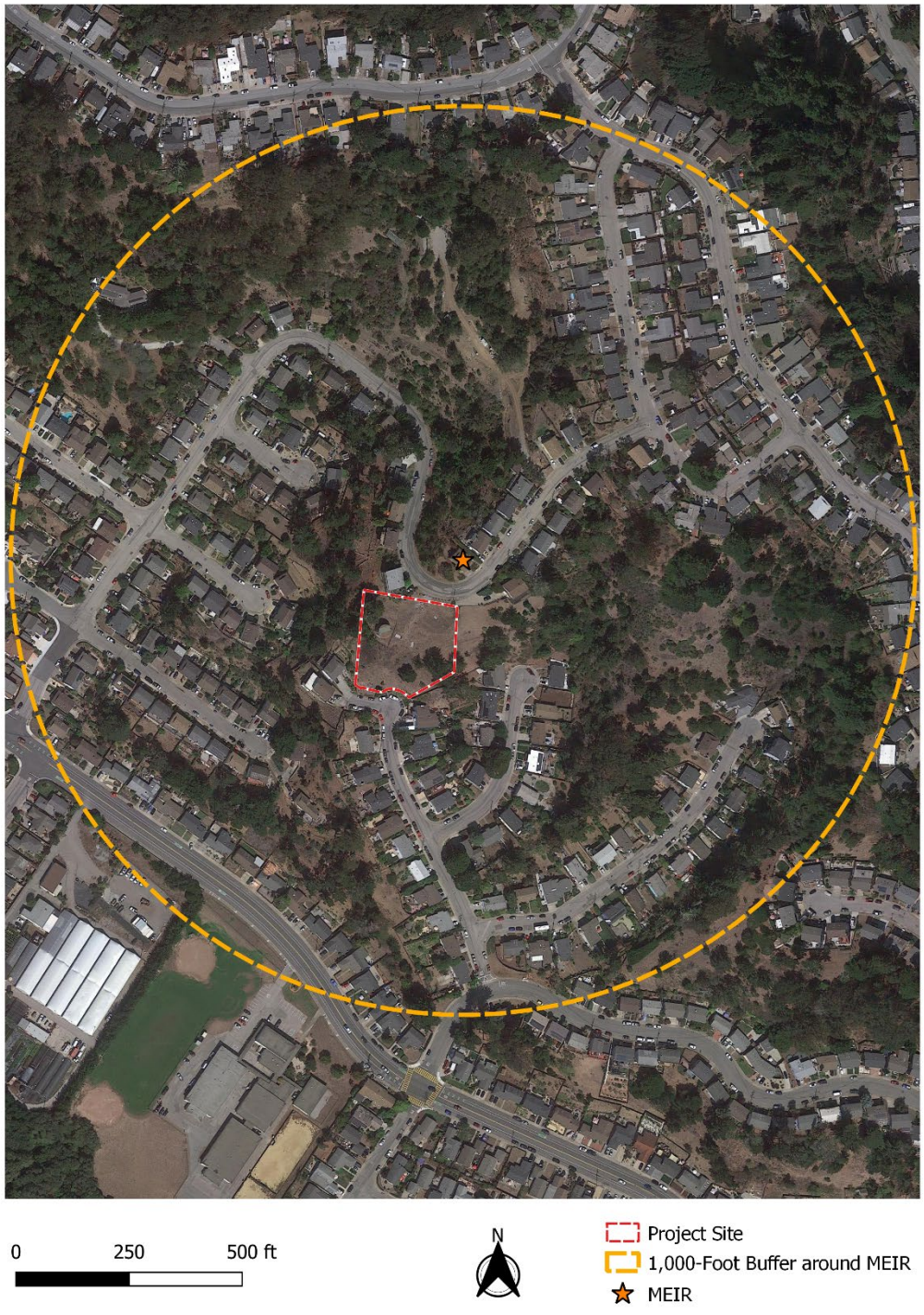

Table 6. Health Risks during Construction of the Project

Construction Scenario	Diesel Particulate Matter		Exhaust $PM_{2.5}$
	Cancer Risk (per million)	Chronic Hazard Index	Annual Average Concentration ($\mu g/m^3$)
Construction Emission - without Control Measures			
Maximally Exposed Individual Resident	25.2	0.05	0.23
Construction Emission - with Control Measures			
Maximally Exposed Individual Resident	4.4	<0.01	0.04
Thresholds of Significance	10	1	0.3

Notes: $\mu g/m^3$ = micrograms per cubic meter
Source: See Appendix A.

Toxic Air Contaminants from Operation

The proposed project would not add any stationary source (e.g. diesel emergency generator) that would generate TACs such as DPM and $PM_{2.5}$. Therefore, health risk impacts from project operation were not quantified.

Cumulative TAC Emissions

In addition to TACs emissions during construction, the BAAQMD recommends evaluating the potential cumulative health risks to sensitive receptors from existing and reasonably foreseeable future sources of TACs.

According to the City of Pacific Planning Department[13], there is no foreseeable future development within 1,000 feet of the project site. Based on the BAAQMD's Permitted Stationary Sources Risks and Hazards Screening Tool[14] and confirmation from the BAAQMD staff,[15] there is no existing stationary sources of TAC emissions identified within 1,000 feet of the MEIR. According to the BAAQMD's modeling of mobile sources, no major roadway is located within 1,000 feet of the MEIR.[16] Therefore, cumulative health risks at the MEIR for the proposed project were not quantified.

[13] City of Pacific Planning Department, 2021. Active Planning Application Map. URL: https://www.cityofpacifica.org/depts/planning/active_planning_applications_list.asp. Access on May 21st.
[14] Bay Area Air Quality Management District (BAAQMD), 2020. Permitted Stationary Sources Risks and Hazards Screening Tool. Available at https://baaqmd.maps.arcgis.com/apps/webappviewer/index.html?id=2387ae674013413f987b1071715daa65.
[15] Baseline Environmental Consulting, 2021. From: Matthew Hanson at the Bay Area Air Quality Management District; To: Yilin Tian at Baseline Environmental Consulting. Email Communication. May 18.
[16] Bay Area Air Quality Management District (BAAQMD), 2014. BAAQMD Planning Healthy Places Highway, Major Street, and Rail health risk raster files.

Conclusion

Emissions of criteria air pollutants and TACs from construction of the proposed project would not exceed the BAAQMD thresholds of significance with the implementation of emission control measures.

APPENDICES

APPENDIX A

CALEEMOD REPORT AND CONSTRUCTION INFORMATION PROVIDED BY THE PROJECT APPLICANT

APPENDIX B

SUMMARY OF ISCST3 MODEL PARAMETERS, ASSUMPTIONS, AND RESULTS FOR DPM AND PM2.5 EMISSIONS DURING CONSTRUCTION

APPENDIX C

AERMOD REPORT

APPENDIX D

HEALTH RISK ASSESSMENT INPUT PARAMETERS AND RESULTS

APPENDICES

APPENDIX A

CALEEMOD REPORT AND CONSTRUCTION INFORMATION PROVIDED BY THE PROJECT APPLICANT

Sheila Tank

San Mateo County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.96	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	70
Climate Zone	5			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	206	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Sheila Tank - San Mateo County, Annual

Project Characteristics - PGE CO2 intensity factor modified to the most recent value from 2018

Land Use - Select user defined land use which would not affect the construction emissions

Construction Phase - Construction phases established based on the information provided by the project applicant.

Off-road Equipment - Construction equipment based on the list provided by project applicant.

Off-road Equipment - Construction equipment based on the list provided by project applicant

Off-road Equipment - Construction equipment based on the list provided by project applicant

Off-road Equipment - Construction equipment based on the list provided by project applicant

Off-road Equipment - Construction equipment based on the list provided by project applicant

Trips and VMT - Hauling trips and vendor trips (concrete trucks) estimated according to the information provided by the project applicant. Number of workers on site modified according to information provided by the project applicant.

Grading - Import and export volumes were provided by project applicant.

Energy Use -

Construction Off-road Equipment Mitigation - Use Tier 2 engines and level 3 DPF for equipment with larger than 75 horsepower.

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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	0.0344	0.3780	0.2336	6.0000e-004	0.0429	0.0146	0.0574	0.0193	0.0136	0.0329	0.0000	54.7784	54.7784	0.0118	0.0000	55.0739
2022	0.0774	0.7234	0.7522	1.5100e-003	0.0265	0.0330	0.0594	9.5600e-003	0.0316	0.0412	0.0000	133.1481	133.1481	0.0212	0.0000	133.6770
Maximum	**0.0774**	**0.7234**	**0.7522**	**1.5100e-003**	**0.0429**	**0.0330**	**0.0594**	**0.0193**	**0.0316**	**0.0412**	**0.0000**	**133.1481**	**133.1481**	**0.0212**	**0.0000**	**133.6770**

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	0.0188	0.3943	0.2760	6.0000e-004	0.0429	2.4400e-003	0.0453	0.0193	2.4300e-003	0.0218	0.0000	54.7783	54.7783	0.0118	0.0000	55.0739
2022	0.0531	1.0997	0.8543	1.5100e-003	0.0265	6.2100e-003	0.0327	9.5600e-003	6.1900e-003	0.0158	0.0000	133.1479	133.1479	0.0212	0.0000	133.6768
Maximum	**0.0531**	**1.0997**	**0.8543**	**1.5100e-003**	**0.0429**	**6.2100e-003**	**0.0453**	**0.0193**	**6.1900e-003**	**0.0218**	**0.0000**	**133.1479**	**133.1479**	**0.0212**	**0.0000**	**133.6768**

	ROG	NOx	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	**35.72**	**-35.64**	**-14.66**	**0.00**	**0.00**	**81.80**	**33.26**	**0.00**	**80.93**	**49.38**	**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	9-1-2021	11-30-2021	0.2840	0.2772
2	12-1-2021	2-28-2022	0.3815	0.5108
3	3-1-2022	5-31-2022	0.4084	0.6036
4	6-1-2022	8-31-2022	0.1316	0.1641
		Highest	0.4084	0.6036

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

	ROG	NOx	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	9/1/2021	10/26/2021	5	40	
2	Retaining Wall and Site Preparation	Site Preparation	10/27/2021	12/21/2021	5	40	
3	Tank Construction	Building Construction	12/27/2021	6/9/2022	5	119	
4	Backfill and Grading	Grading	6/9/2022	6/15/2022	5	5	
5	Access Road Paving	Paving	6/15/2022	7/5/2022	5	15	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	0.40	81	0.73
Demolition	Excavators	3	1.00	172	0.42
Demolition	Graders	1	2.00	187	0.41
Demolition	Rubber Tired Dozers	1	2.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	2	0.80	97	0.37
Retaining Wall and Site Preparation	Cranes	1	1.00	231	0.29
Retaining Wall and Site Preparation	Dumpers/Tenders	8	2.50	16	0.38
Retaining Wall and Site Preparation	Graders	1	3.00	187	0.41
Retaining Wall and Site Preparation	Other Construction Equipment	1	1.00	172	0.42
Retaining Wall and Site Preparation	Rollers	1	1.00	80	0.38
Retaining Wall and Site Preparation	Rubber Tired Dozers	1	2.00	247	0.40

Retaining Wall and Site Preparation	Tractors/Loaders/Backhoes	2	2.50	97	0.37
Tank Construction	Aerial Lifts	1	1.30	63	0.31
Tank Construction	Air Compressors	2	4.00	78	0.48
Tank Construction	Cranes	1	4.70	231	0.29
Tank Construction	Forklifts	1	5.40	89	0.20
Tank Construction	Generator Sets	2	4.00	84	0.74
Tank Construction	Other Construction Equipment	1	1.00	174	0.46
Tank Construction	Other Construction Equipment	1	0.30	320	0.17
Tank Construction	Other Construction Equipment	2	0.20	172	0.42
Tank Construction	Pressure Washers	1	2.70	13	0.30
Tank Construction	Pumps	1	1.30	84	0.74
Tank Construction	Rough Terrain Forklifts	1	5.40	100	0.40
Tank Construction	Skid Steer Loaders	1	0.10	65	0.37
Tank Construction	Tractors/Loaders/Backhoes	5	0.10	97	0.37
Tank Construction	Welders	1	0.10	46	0.45
Backfill and Grading	Concrete/Industrial Saws	0	0.00	81	0.73
Backfill and Grading	Dumpers/Tenders	1	6.40	16	0.38
Backfill and Grading	Graders	1	4.00	187	0.41
Backfill and Grading	Other Construction Equipment	1	4.00	172	0.42
Backfill and Grading	Rollers	2	3.00	80	0.38
Backfill and Grading	Rubber Tired Dozers	1	4.80	247	0.40
Backfill and Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Access Road Paving	Cement and Mortar Mixers	0	0.00	9	0.56
Access Road Paving	Concrete/Industrial Saws	1	0.50	81	0.73
Access Road Paving	Cranes	1	1.30	231	0.29
Access Road Paving	Graders	1	2.10	187	0.41
Access Road Paving	Other Construction Equipment	3	1.60	172	0.42

Access Road Paving	Pavers	0	0.00	130	0.42
Access Road Paving	Pumps	1	1.10	84	0.74
Access Road Paving	Rollers	0	0.00	80	0.38
Access Road Paving	Tractors/Loaders/Backhoes	0	0.00	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	8	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Retaining Wall and Site Preparation	15	20.00	0.00	386.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Tank Construction	21	28.00	6.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Backfill and Grading	7	18.00	0.00	107.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Access Road Paving	7	12.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

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					
Off-Road	0.0107	0.1145	0.0713	1.4000e-004		5.1600e-003	5.1600e-003		4.7600e-003	4.7600e-003	0.0000	12.3878	12.3878	3.8600e-003	0.0000	12.4844
Total	**0.0107**	**0.1145**	**0.0713**	**1.4000e-004**		**5.1600e-003**	**5.1600e-003**		**4.7600e-003**	**4.7600e-003**	**0.0000**	**12.3878**	**12.3878**	**3.8600e-003**	**0.0000**	**12.4844**

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	5.1000e-004	3.3000e-004	3.5900e-003	1.0000e-005	1.5700e-003	1.0000e-005	1.5800e-003	4.2000e-004	1.0000e-005	4.3000e-004	0.0000	1.2644	1.2644	2.0000e-005	0.0000	1.2650
Total	**5.1000e-004**	**3.3000e-004**	**3.5900e-003**	**1.0000e-005**	**1.5700e-003**	**1.0000e-005**	**1.5800e-003**	**4.2000e-004**	**1.0000e-005**	**4.3000e-004**	**0.0000**	**1.2644**	**1.2644**	**2.0000e-005**	**0.0000**	**1.2650**

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	tons/yr										MT/yr					
Off-Road	4.4900e-003	0.1210	0.0888	1.4000e-004		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	12.3878	12.3878	3.8600e-003	0.0000	12.4843
Total	**4.4900e-003**	**0.1210**	**0.0888**	**1.4000e-004**		**4.9000e-004**	**4.9000e-004**		**4.9000e-004**	**4.9000e-004**	**0.0000**	**12.3878**	**12.3878**	**3.8600e-003**	**0.0000**	**12.4843**

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	5.1000e-004	3.3000e-004	3.5900e-003	1.0000e-005	1.5700e-003	1.0000e-005	1.5800e-003	4.2000e-004	1.0000e-005	4.3000e-004	0.0000	1.2644	1.2644	2.0000e-005	0.0000	1.2650
Total	**5.1000e-004**	**3.3000e-004**	**3.5900e-003**	**1.0000e-005**	**1.5700e-003**	**1.0000e-005**	**1.5800e-003**	**4.2000e-004**	**1.0000e-005**	**4.3000e-004**	**0.0000**	**1.2644**	**1.2644**	**2.0000e-005**	**0.0000**	**1.2650**

3.3 Retaining Wall and 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					0.0343	0.0000	0.0343	0.0170	0.0000	0.0170	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0172	0.1741	0.0940	2.1000e-004		7.7000e-003	7.7000e-003		7.1500e-003	7.1500e-003	0.0000	17.4960	17.4960	5.0600e-003	0.0000	17.6225
Total	**0.0172**	**0.1741**	**0.0940**	**2.1000e-004**	**0.0343**	**7.7000e-003**	**0.0420**	**0.0170**	**7.1500e-003**	**0.0242**	**0.0000**	**17.4960**	**17.4960**	**5.0600e-003**	**0.0000**	**17.6225**

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	1.6300e-003	0.0574	0.0269	1.5000e-004	3.2300e-003	1.7000e-004	3.4000e-003	8.9000e-004	1.7000e-004	1.0500e-003	0.0000	15.8518	15.8518	2.0300e-003	0.0000	15.9025
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	1.0200e-003	6.6000e-004	7.1900e-003	3.0000e-005	3.1500e-003	2.0000e-005	3.1700e-003	8.4000e-004	2.0000e-005	8.6000e-004	0.0000	2.5288	2.5288	5.0000e-005	0.0000	2.5300
Total	**2.6500e-003**	**0.0581**	**0.0341**	**1.8000e-004**	**6.3800e-003**	**1.9000e-004**	**6.5700e-003**	**1.7300e-003**	**1.9000e-004**	**1.9100e-003**	**0.0000**	**18.3806**	**18.3806**	**2.0800e-003**	**0.0000**	**18.4325**

3.3 Retaining Wall and 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	tons/yr										MT/yr					
Fugitive Dust					0.0343	0.0000	0.0343	0.0170	0.0000	0.0170	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.0200e-003	0.1710	0.1153	2.1000e-004		1.4900e-003	1.4900e-003		1.4900e-003	1.4900e-003	0.0000	17.4960	17.4960	5.0600e-003	0.0000	17.6225
Total	**9.0200e-003**	**0.1710**	**0.1153**	**2.1000e-004**	**0.0343**	**1.4900e-003**	**0.0358**	**0.0170**	**1.4900e-003**	**0.0185**	**0.0000**	**17.4960**	**17.4960**	**5.0600e-003**	**0.0000**	**17.6225**

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	1.6300e-003	0.0574	0.0269	1.5000e-004	3.2300e-003	1.7000e-004	3.4000e-003	8.9000e-004	1.7000e-004	1.0500e-003	0.0000	15.8518	15.8518	2.0300e-003	0.0000	15.9025
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	1.0200e-003	6.6000e-004	7.1900e-003	3.0000e-005	3.1500e-003	2.0000e-005	3.1700e-003	8.4000e-004	2.0000e-005	8.6000e-004	0.0000	2.5288	2.5288	5.0000e-005	0.0000	2.5300
Total	**2.6500e-003**	**0.0581**	**0.0341**	**1.8000e-004**	**6.3800e-003**	**1.9000e-004**	**6.5700e-003**	**1.7300e-003**	**1.9000e-004**	**1.9100e-003**	**0.0000**	**18.3806**	**18.3806**	**2.0800e-003**	**0.0000**	**18.4325**

3.4 Tank 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	3.1200e-003	0.0293	0.0287	5.0000e-005		1.4900e-003	1.4900e-003		1.4400e-003	1.4400e-003	0.0000	4.4145	4.4145	7.6000e-004	0.0000	4.4334
Total	**3.1200e-003**	**0.0293**	**0.0287**	**5.0000e-005**		**1.4900e-003**	**1.4900e-003**		**1.4400e-003**	**1.4400e-003**	**0.0000**	**4.4145**	**4.4145**	**7.6000e-004**	**0.0000**	**4.4334**

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	5.0000e-005	1.5600e-003	6.7000e-004	0.0000	1.0000e-004	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.3926	0.3926	3.0000e-005	0.0000	0.3934
Worker	1.8000e-004	1.2000e-004	1.2600e-003	0.0000	5.5000e-004	0.0000	5.5000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.4426	0.4426	1.0000e-005	0.0000	0.4428
Total	**2.3000e-004**	**1.6800e-003**	**1.9300e-003**	**0.0000**	**6.5000e-004**	**0.0000**	**6.5000e-004**	**1.8000e-004**	**0.0000**	**1.8000e-004**	**0.0000**	**0.8351**	**0.8351**	**4.0000e-005**	**0.0000**	**0.8362**

3.4 Tank 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	tons/yr										MT/yr					
Off-Road	1.9300e-003	0.0422	0.0323	5.0000e-005		2.5000e-004	2.5000e-004		2.5000e-004	2.5000e-004	0.0000	4.4145	4.4145	7.6000e-004	0.0000	4.4334
Total	**1.9300e-003**	**0.0422**	**0.0323**	**5.0000e-005**		**2.5000e-004**	**2.5000e-004**		**2.5000e-004**	**2.5000e-004**	**0.0000**	**4.4145**	**4.4145**	**7.6000e-004**	**0.0000**	**4.4334**

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	5.0000e-005	1.5600e-003	6.7000e-004	0.0000	1.0000e-004	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.3926	0.3926	3.0000e-005	0.0000	0.3934
Worker	1.8000e-004	1.2000e-004	1.2600e-003	0.0000	5.5000e-004	0.0000	5.5000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.4426	0.4426	1.0000e-005	0.0000	0.4428
Total	**2.3000e-004**	**1.6800e-003**	**1.9300e-003**	**0.0000**	**6.5000e-004**	**0.0000**	**6.5000e-004**	**1.8000e-004**	**0.0000**	**1.8000e-004**	**0.0000**	**0.8351**	**0.8351**	**4.0000e-005**	**0.0000**	**0.8362**

3.4 Tank 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	0.0652	0.6028	0.6488	1.1600e-003		0.0296	0.0296		0.0285	0.0285	0.0000	100.6533	100.6533	0.0171	0.0000	101.0794
Total	**0.0652**	**0.6028**	**0.6488**	**1.1600e-003**		**0.0296**	**0.0296**		**0.0285**	**0.0285**	**0.0000**	**100.6533**	**100.6533**	**0.0171**	**0.0000**	**101.0794**

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	1.0300e-003	0.0335	0.0153	9.0000e-005	2.2300e-003	7.0000e-005	2.3000e-003	6.4000e-004	7.0000e-005	7.1000e-004	0.0000	8.8352	8.8352	7.7000e-004	0.0000	8.8544
Worker	3.8400e-003	2.3900e-003	0.0267	1.1000e-004	0.0126	7.0000e-005	0.0126	3.3400e-003	7.0000e-005	3.4100e-003	0.0000	9.7210	9.7210	1.7000e-004	0.0000	9.7251
Total	**4.8700e-003**	**0.0359**	**0.0420**	**2.0000e-004**	**0.0148**	**1.4000e-004**	**0.0149**	**3.9800e-003**	**1.4000e-004**	**4.1200e-003**	**0.0000**	**18.5562**	**18.5562**	**9.4000e-004**	**0.0000**	**18.5795**

3.4 Tank 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	tons/yr										MT/yr					
Off-Road	0.0439	0.9626	0.7374	1.1600e-003		5.6000e-003	5.6000e-003		5.5900e-003	5.5900e-003	0.0000	100.6532	100.6532	0.0171	0.0000	101.0793
Total	**0.0439**	**0.9626**	**0.7374**	**1.1600e-003**		**5.6000e-003**	**5.6000e-003**		**5.5900e-003**	**5.5900e-003**	**0.0000**	**100.6532**	**100.6532**	**0.0171**	**0.0000**	**101.0793**

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	1.0300e-003	0.0335	0.0153	9.0000e-005	2.2300e-003	7.0000e-005	2.3000e-003	6.4000e-004	7.0000e-005	7.1000e-004	0.0000	8.8352	8.8352	7.7000e-004	0.0000	8.8544
Worker	3.8400e-003	2.3900e-003	0.0267	1.1000e-004	0.0126	7.0000e-005	0.0126	3.3400e-003	7.0000e-005	3.4100e-003	0.0000	9.7210	9.7210	1.7000e-004	0.0000	9.7251
Total	**4.8700e-003**	**0.0359**	**0.0420**	**2.0000e-004**	**0.0148**	**1.4000e-004**	**0.0149**	**3.9800e-003**	**1.4000e-004**	**4.1200e-003**	**0.0000**	**18.5562**	**18.5562**	**9.4000e-004**	**0.0000**	**18.5795**

3.5 Backfill and Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.7400e-003	0.0000	9.7400e-003	5.0400e-003	0.0000	5.0400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.1100e-003	0.0329	0.0221	4.0000e-005		1.5300e-003	1.5300e-003		1.4100e-003	1.4100e-003	0.0000	3.7571	3.7571	1.1900e-003	0.0000	3.7869
Total	**3.1100e-003**	**0.0329**	**0.0221**	**4.0000e-005**	**9.7400e-003**	**1.5300e-003**	**0.0113**	**5.0400e-003**	**1.4100e-003**	**6.4500e-003**	**0.0000**	**3.7571**	**3.7571**	**1.1900e-003**	**0.0000**	**3.7869**

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	4.3000e-004	0.0146	7.7000e-003	4.0000e-005	9.0000e-004	4.0000e-005	9.4000e-004	2.5000e-004	4.0000e-005	2.9000e-004	0.0000	4.3186	4.3186	5.7000e-004	0.0000	4.3328
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	1.1000e-004	7.0000e-005	7.5000e-004	0.0000	3.5000e-004	0.0000	3.6000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.2741	0.2741	0.0000	0.0000	0.2742
Total	**5.4000e-004**	**0.0147**	**8.4500e-003**	**4.0000e-005**	**1.2500e-003**	**4.0000e-005**	**1.3000e-003**	**3.4000e-004**	**4.0000e-005**	**3.9000e-004**	**0.0000**	**4.5927**	**4.5927**	**5.7000e-004**	**0.0000**	**4.6070**

3.5 Backfill and Grading - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.7400e-003	0.0000	9.7400e-003	5.0400e-003	0.0000	5.0400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.5600e-003	0.0377	0.0272	4.0000e-005		2.0000e-004	2.0000e-004		2.0000e-004	2.0000e-004	0.0000	3.7571	3.7571	1.1900e-003	0.0000	3.7869
Total	**1.5600e-003**	**0.0377**	**0.0272**	**4.0000e-005**	**9.7400e-003**	**2.0000e-004**	**9.9400e-003**	**5.0400e-003**	**2.0000e-004**	**5.2400e-003**	**0.0000**	**3.7571**	**3.7571**	**1.1900e-003**	**0.0000**	**3.7869**

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	4.3000e-004	0.0146	7.7000e-003	4.0000e-005	9.0000e-004	4.0000e-005	9.4000e-004	2.5000e-004	4.0000e-005	2.9000e-004	0.0000	4.3186	4.3186	5.7000e-004	0.0000	4.3328
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	1.1000e-004	7.0000e-005	7.5000e-004	0.0000	3.5000e-004	0.0000	3.6000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.2741	0.2741	0.0000	0.0000	0.2742
Total	**5.4000e-004**	**0.0147**	**8.4500e-003**	**4.0000e-005**	**1.2500e-003**	**4.0000e-005**	**1.3000e-003**	**3.4000e-004**	**4.0000e-005**	**3.9000e-004**	**0.0000**	**4.5927**	**4.5927**	**5.7000e-004**	**0.0000**	**4.6070**

3.6 Access Road Paving - 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	3.4900e-003	0.0370	0.0294	6.0000e-005		1.6700e-003	1.6700e-003		1.5500e-003	1.5500e-003	0.0000	5.0407	5.0407	1.4000e-003	0.0000	5.0758
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.4900e-003**	**0.0370**	**0.0294**	**6.0000e-005**		**1.6700e-003**	**1.6700e-003**		**1.5500e-003**	**1.5500e-003**	**0.0000**	**5.0407**	**5.0407**	**1.4000e-003**	**0.0000**	**5.0758**

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	2.2000e-004	1.3000e-004	1.5000e-003	1.0000e-005	7.1000e-004	0.0000	7.1000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.5482	0.5482	1.0000e-005	0.0000	0.5484
Total	**2.2000e-004**	**1.3000e-004**	**1.5000e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.1000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.5482**	**0.5482**	**1.0000e-005**	**0.0000**	**0.5484**

3.6 Access Road Paving - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.9500e-003	0.0486	0.0379	6.0000e-005		2.1000e-004	2.1000e-004		2.1000e-004	2.1000e-004	0.0000	5.0407	5.0407	1.4000e-003	0.0000	5.0758
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.9500e-003**	**0.0486**	**0.0379**	**6.0000e-005**		**2.1000e-004**	**2.1000e-004**		**2.1000e-004**	**2.1000e-004**	**0.0000**	**5.0407**	**5.0407**	**1.4000e-003**	**0.0000**	**5.0758**

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	2.2000e-004	1.3000e-004	1.5000e-003	1.0000e-005	7.1000e-004	0.0000	7.1000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.5482	0.5482	1.0000e-005	0.0000	0.5484
Total	**2.2000e-004**	**1.3000e-004**	**1.5000e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.1000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.5482**	**0.5482**	**1.0000e-005**	**0.0000**	**0.5484**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.476244	0.050164	0.262181	0.139658	0.017521	0.006864	0.023236	0.006525	0.004137	0.003158	0.009064	0.000471	0.000777

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

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

Mitigated

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

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Unmitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

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	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

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			
User Defined Industrial	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			
User Defined Industrial	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			
User Defined Industrial	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			
User Defined Industrial	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

Combined construction Phase	Duration (work days per combined comstruction phase)	Construction Sequence	Activity	Start Date (per sequence)	End Date (per sequence)	Duration (works days per sequence)	Equipment Type provided by Applicant	CalEEMod Equipment Type	Quantity (per sequence)	Horsepower	Load Factor	Total hours per piece of equipment (per sequence)	Usage Hours/Day-piece (combined construction phase)	Worker per day* (combined construction phase)
Demolition	40	1	Temporary Site Access	9/1/2021	9/28/2021	20	Graders	Graders	1	187	0.41	80	2.0	5
							Dozer	Rubber Tired Dozers	1	247	0.4	80	2.0	
							Hydraulic Excavator	Excavators	1	172	0.42	80	1.0	
							Truck Tractor, Backhoe Loader	Tractors/Loaders/Backhoes	1	97	0.37	40	0.8	
		2	Demolition	9/29/2021	10/26/2021	20	Hydraulic Excavator	Excavators	1	172	0.42	24	--	
							Backhoe Loader	Tractors/Loaders/Backhoes	1	97	0.37	24	--	
							Hydraulic Hammer	Excavators	1	172	0.42	20	--	
							Concrete Saw	Concrete/Industrial Saws	1	81	0.73	16	0.4	
Retaining Wall and Site Prep	40	3	Temporary Retaining Wall	10/27/2021	11/23/2021	20	Dump Trailer	Dumpers/Tenders	2	16	0.38	40	2.5	10
							Backhoe Loader	Tractors/Loaders/Backhoes	1	97	0.37	40	2.5	
		4	Excavation and Site Prep	11/24/2021	12/23/2021	20	Grader	Graders	1	187	0.41	120	3.0	
							Sheepsfoot Roller	Rollers	1	80	0.38	40	1.0	
							Dozer	Rubber Tired Dozers	1	247	0.4	80	2.0	
							Flatbed Trailer	Other Construction Equipment	1	172	0.42	40	1.0	
							Dump Trailer	Dumpers/Tenders	6	16	0.38	120	--	
							Hydraulic crane	Cranes	1	231	0.29	40	1.0	
							Truck Tractor	Tractors/Loaders/Backhoes	1	97	0.37	160	--	
Tank Construction	119	5	Tank Construction - w/foundation	12/27/2021	5/16/2022	100	Aerial Lifts (Man Lift)	Aerial Lifts	1	63	0.31	160	1.3	14
							Air Compressors	Air Compressors	2	78	0.48	480	4.0	
							Cranes	Cranes	1	231	0.29	560	4.7	
							Forklifts	Forklifts	1	89	0.2	640	5.4	
							Generator Sets	Generator Sets	2	84	0.74	480	4.0	
							Other Construction Equipment (Prestressing Machine)	Other Construction Equipment	1	174	0.46	120	1.0	
							Other Construction Equipment (Waterblaster)	Other Construction Equipment	1	320	0.17	40	0.3	
							Pressure Washers	Pressure Washers	1	13	0.3	320	2.7	
							Pumps	Pumps	1	84	0.74	160	1.3	
							Rough Terrain Forklifts	Rough Terrian Forklifts	1	100	0.4	640	5.4	
		6	Tank Leak Testing and Disinfection	5/17/2022	5/30/2022	10	Water Tank Trailer, 5,000 gallon, Flatbed Truck Gas 1.5 ton	Other Construction Equipment	1	172	0.42	20	0.1	
		7	Electrical Work	12/27/2021	1/11/2022	10	Truck Tractor, Backhoe Loader	Tractors/Loaders/Backhoes	1	97	0.37	20	0.1	
		8	Tank Startup and Testing	5/17/2022	5/19/2022	2	Water Tank Trailer, 5,000 gallon, Flatbed Truck Gas 1.5 ton	Other Construction Equipment	1	172	0.42	8	--	
		9	Landscaping	5/19/2022	6/1/2022	10	Skid Steer	Skid Steer Loaders	1	65	0.37	8	0.1	
							Backhoe Loader	Tractors/Loaders/Backhoes	1	97	0.37	8	--	
							Loader	Tractors/Loaders/Backhoes	1	97	0.37	8	--	
							Truck Tractor	Tractors/Loaders/Backhoes	1	97	0.37	8	--	
		10	Demobilization	6/1/2022	6/6/2022	3	Truck Tractor	Tractors/Loaders/Backhoes	1	97	0.37	16	--	
		11	Piping Connections	6/6/2022	6/9/2022	4	Welder Gas Engine 300 amp, 50' Air Hoses, Air Compressor 365 cfm	Welders	1	46	0.45	16	0.1	
Backfill and Grading	5	12	Backfill and Grading	6/9/2022	6/15/2022	5	Grader	Graders	1	187	0.41	20	4.0	9
							Sheepsfoot Roller	Rollers	1	80	0.38	20	3.0	
							Roller Vibratory	Rollers	1	80	0.38	10	--	
							Dozer	Rubber Tired Dozers	1	247	0.4	24	4.8	
							Flatbed Trailer	Other Construction Equipment	1	172	0.42	20	4.0	
							Dump Trailer	Dumpers/Tenders	1	16	0.38	32	6.4	
							Truck Tractor	Tractors/Loaders/Backhoes	1	97	0.37	40	8.0	
Access Road Paving	15	13	Fencing and Gates	6/15/2022	6/21/2022	5	Manual fence post auger gas, flat bed truck gas 1.5 ton	Other Construction Equipment	1	172	0.42	16	1.6	6
		14	Driveway	6/21/2022	7/5/2022	10	Grader	Graders	1	187	0.41	32	2.1	
							Concrete pump	Pumps	1	84	0.74	16	1.1	
							Concrete saw	Concrete/Industrial Saws	1	81	0.73	8	0.5	
							Flatbed truck gas 3 ton	Other Construction Equipment	1	172	0.42	40	--	
							Gas engine vibrator	Other Construction Equipment	1	172	0.42	16	--	
							Hydraulic Crane	Cranes	1	231	0.29	20	1.3	

*Number of workers needed per day for each construction sequence was estimated by multiplying 1.25 times the number of pieces of equipment for all construction sequences. Weighted-average number of workers needed per day for each combined construction phase was estimated based on duration of each construction sequence within that combined construction phase.

APPENDIX B

SUMMARY OF ISCST3 MODEL PARAMETERS, ASSUMPTIONS, AND RESULTS FOR DPM AND PM2.5 EMISSIONS DURING CONSTRUCTION

Summary of ISCST3 Model Parameters, Assumptions, and Results for DPM and $PM_{2.5}$ Emissions during Construction

ISCST3 Model Parameters and Assumptions			
Source Type	**Units**	**Value**	**Notes**
Volume Source: Off-Road Equipment Exhaust for Construction			
Hours/Work Day	hours/day	8	Monday - Friday, 7 AM - 3 PM
DPM Emission Rate	gram/second	0.00680	Exhaust PM_{10} from off-road equipment
Number of Sources	count	23	SMAQMD, 2015
Emission Rate/Source	gram/second	0.000296	
Release Height	meters	5.0	SMAQMD, 2015
Length of Side	meters	10.0	SMAQMD, 2015
Initial Lateral Dimension	meters	2.3	ISCST3 Calculator
Initial Vertical Dimension	meters	1.0	SMAQMD, 2015

ISCST3 Model Results				
Location Type	**Emissions Source**	**Pollutant**	**Annual Average Concentration**	**Notes**
Residential Receptor	Uncontrolled Construction	DPM ($\mu g/m^{3)}$	0.24	Offsite MEIR (Ground level residential receptor)
		$PM_{2.5}$ ($\mu g/m^{3)}$	0.23	Offsite MEIR (Ground level residential receptor)
	Controlled Construction	DPM ($\mu g/m^{3)}$	0.04	Offsite MEIR (Ground level residential receptor)
		$PM_{2.5}$ ($\mu g/m^{3)}$	0.04	Offsite MEIR (Ground level residential receptor)

Notes:

DPM = diesel particulate matter

PM_{10} = particulate matter with aerodynamic resistance diameters equal to or less than 10 microns

$PM_{2.5}$ = particulate matter with aerodynamic resistance diameters equal to or less than 2.5 microns

$\mu g/m^3$ = micrograms per cubic meter

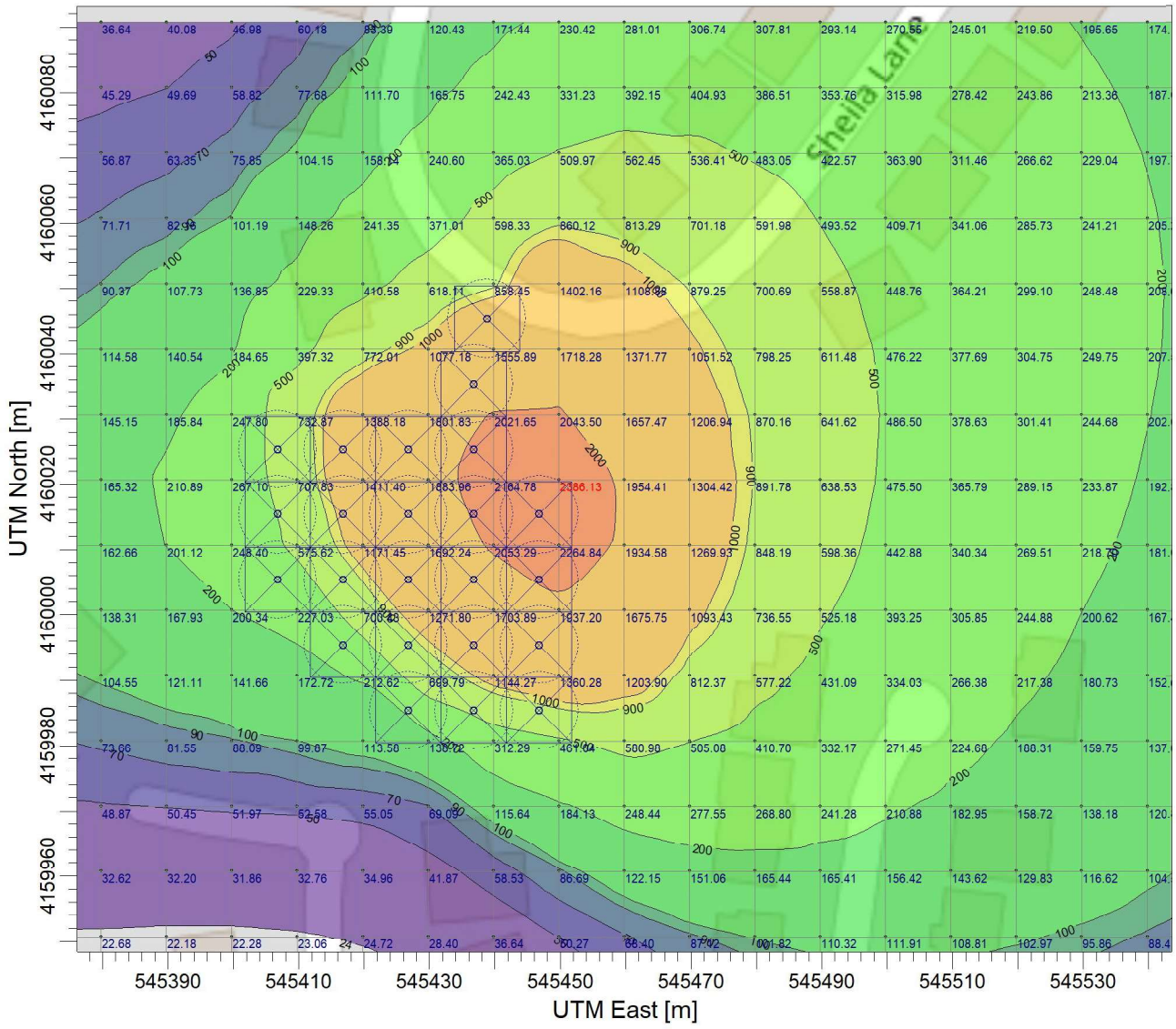
Sacramento Metropolitan Air Quality Management District (SMAQMD), 2015. *Guide to Air Quality Assessment in Sacramento County* . June.

APPENDIX C

AERMOD REPORT

PROJECT TITLE:

C:\Users\yilin\Desktop\AERMOD\AERMOD.isc



PLOT FILE OF PERIOD VALUES FOR SOURCE GROUP: ALL ug/m^3

Max: 2386 [ug/m^3] at (545449.75, 4160020.75)

24 50 70 90 100 200 500 900 1000 2000 2386

COMMENTS:	SOURCES: **23**	COMPANY NAME:	
	RECEPTORS: **441**	MODELER:	
	OUTPUT TYPE: **Concentration**	SCALE: 1:1,054 — 0 — 0.03 km	
	MAX: **2386 ug/m^3**	DATE: **5/24/2021**	PROJECT NO.:

APPENDIX D

HEALTH RISK ASSESSMENT INPUT PARAMETERS AND RESULTS

Health Risk Assessment for DPM Emissions during Construction

Without Minimization Measures

Inhalation Cancer Risk Assessment for DPM	Units	Age Group		Notes
		3rd Trimester	0-2 Years	
DPM Concentration (C)	$\mu g/m^3$	0.240	0.240	ISCST3 Annual Average
Daily Breathing Rate (DBR)	L/kg-day	361	1090	95th percentile (OEHHA, 2015)
Inhalation absorption factor (A)	unitless	1.0	1.0	OEHHA, 2015
Exposure Frequency (EF)	unitless	0.96	0.96	350 days/365 days in a year (OEHHA, 2015)
Dose Conversion Factor (CF_D)	$mg\text{-}m^3/\mu g\text{-}L$	0.000001	0.000001	Conversion of µg to mg and L to m^3
Dose (D)	mg/kg/day	0.000083	0.000251	$C*DBR*A*EF*CF_D$ (OEHHA, 2015)
Cancer Potency Factor (CPF)	$(mg/kg/day)^{-1}$	1.1	1.1	OEHHA, 2015
Age Sensitivity Factor (ASF)	unitless	10	10	OEHHA, 2015
Annual Exposure Duration (ED)	years	0.25	0.67	From September 2021 to July 2022
Averaging Time (AT)	years	70	70	70 years for residents (OEHHA, 2015)
Fraction of time at home (FAH)	unitless	0.85	0.85	OEHHA, 2015
Cancer Risk Conversion Factor (CF)	unitless	1000000	1000000	Chances per million (OEHHA, 2015)
Cancer Risk	per million	2.78	22.38	D*CPF*ASF*ED/AT*FAH*CF (OEHHA, 2015)
Total Cancer Risk	per million	25.2		At Offsite MEIR location

Hazard Index for DPM	Units	Value	Notes
Chronic REL	$\mu g/m^3$	5.0	OEHHA, 2015
Chronic Hazard Index	unitless	0.048	At Offsite MEIR location

With Minimization Measures

Inhalation Cancer Risk Assessment for DPM	Units	Age Group		Notes
		3rd Trimester	0-2 Years	
DPM Concentration (C)	$\mu g/m^3$	0.042	0.042	ISCST3 Annual Average
Daily Breathing Rate (DBR)	L/kg-day	361	1090	95th percentile (OEHHA, 2015)
Inhalation absorption factor (A)	unitless	1.0	1.0	OEHHA, 2015
Exposure Frequency (EF)	unitless	0.96	0.96	350 days/365 days in a year (OEHHA, 2015)
Dose Conversion Factor (CF_D)	$mg\text{-}m^3/\mu g\text{-}L$	0.000001	0.000001	Conversion of µg to mg and L to m^3
Dose (D)	mg/kg/day	0.000015	0.000044	$C*DBR*A*EF*CF_D$ (OEHHA, 2015)
Cancer Potency Factor (CPF)	$(mg/kg/day)^{-1}$	1.1	1.1	OEHHA, 2015
Age Sensitivity Factor (ASF)	unitless	10	10	OEHHA, 2015
Annual Exposure Duration (ED)	years	0.25	0.67	From September 2021 to July 2022
Averaging Time (AT)	years	70	70	70 years for residents (OEHHA, 2015)
Fraction of time at home (FAH)	unitless	0.85	0.85	OEHHA, 2015
Cancer Risk Conversion Factor (CF)	unitless	1000000	1000000	Chances per million (OEHHA, 2015)
Cancer Risk	per million	0.49	3.91	D*CPF*ASF*ED/AT*FAH*CF (OEHHA, 2015)
Total Cancer Risk	per million	4.4		At Offsite MEIR location

Hazard Index for DPM	Units	Value	Notes
Chronic REL	$\mu g/m^3$	5.0	OEHHA, 2015
Chronic Hazard Index	unitless	0.008	At Offsite MEIR location

Notes:

DPM = diesel particulate matter

REL = reference exposure level

$\mu g/m^3$ = micrograms per cubic meter

L/kg-day = liters per kilogram-day

m^3/L = cubic meters per liter

$(mg/kg/day)^{-1}$ = 1/milligrams per kilograms per day

MEIR = maximum exposed individual resident

Office of Environmental Health Hazard Assessment (OEHHA), 2015. *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments. February.*