

# AIR QUALITY IMPACT ANALYSIS

**Sentinel Peak Resources  
Lompoc, CA**

**Prepared For:**

**Sentinel Peak Resources**  
1812 Price Canyon Rd,  
San Luis Obispo, CA 93401

**Prepared By:**

**TRINITY CONSULTANTS**  
4900 California Avenue, Suite 420A  
Bakersfield, CA 93309  
661-282-2200

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## 1. EXECUTIVE SUMMARY

Trinity Consultants has completed an Air Quality Impact Analysis (AQIA) for the proposed Sentinel Peak Resources (SPR) Truck Loading Rack Project (Project). The proposed Project will consist of the installation of a new loading rack located within the existing Lompoc facility located in the County of Santa Barbara. SPR does not anticipate any increase in the throughput of oil, water, and gas following the installation of the loading rack. The trucked materials will consist of crude oil which would be trucked to its final destination.

The proposed site will include the following new improvements/equipment:

- ▶ P-140 Lease Automatic Custody Transfer (LACT) Charge Pump
- ▶ New 3" LACT Unit
- ▶ H2S Removal System – 2 Vessel System
  - 6'-0" dia x 6'-0" ss ASME Pressure Vessel
  - 10'-0" dia x 6'-0" ss ASME Pressure Vessel
- ▶ VOC Removal System – 2 Vessel System
  - 4'-0" dia x 6'-0" ss ASME Pressure Vessel
  - 4'-0" dia x 6'-0" ss ASME Pressure Vessel
- ▶ Truck Loading Rack with Truck Meter and Dry Lock Hose Connections
- ▶ Truck Loading Pad with Concrete Curb
- ▶ Secondary Containment and Storm Water Retention with normally closed valve on storm drain line
- ▶ Minimal Lighting
- ▶ Supporting electrical panels and cabinets.

The existing pipe storage in the area of the loading rack location will be removed and the site will be regraded to accommodate the new truck loading facility. Areas with truck traffic will be improved with asphalt and designed in a way to encourage natural surface flows towards the southwest portion of the property. No new structures, landscaping, parking, or utilities (e.g., water and sewer) are proposed as part of this project. Onsite trees will be trimmed on an as-needed basis. Currently, there are eight (8) full-time employees working in the field, and this is not expected to change as a result of this project.

The proposed Project's construction would include the following criteria pollutant emissions: reactive organic gases (ROG), carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), and suspended particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>). Project operations would generate air pollutant emissions from mobile sources and fugitive sources. Project construction and operational activities would also generate greenhouse gas (GHG) emissions. Criteria and GHG emissions were estimated using the California Emissions Estimator Model (CalEEMod) version 2020.4.0 (California Air Pollution Control Officers Association (CAPCOA) 2020), EMFAC2021 (California Air Resources Board 2021) and Santa Barbara County Air Pollution Control District (SBCAPCD) approved calculation spreadsheets for loading racks and fugitive leak emissions. Project-related emissions were evaluated for compliance with National Ambient Air Quality Standards and California Ambient Air Quality Standards for the six criteria pollutants.

Evaluation of the Project's emissions determined that the Project will not have a significant impact on the Santa Barbara County and South Central Coast Air Basin from unmitigated construction, operations and greenhouse gas related emissions, as shown in **Tables 5-3, 5-5 and 7-1** of this analysis.

Cumulative impacts were also evaluated. Cumulative emissions were not quantified because the details other proposed projects do not provide enough information to accurately estimate their potential emissions. Owing to the inherently cumulative nature of air quality impacts, the threshold for whether a project would make a cumulatively considerable contribution to a significant cumulative impact is simply whether the project would

exceed project-level thresholds. As such, a qualitative evaluation of the cumulative projects supports a finding that the Project's contribution would not be cumulatively considerable because the proposed Project's incremental emissions would be *less than significant*.

## 2. INTRODUCTION

### 2.1 Purpose

This Air Quality Impact Analysis was prepared pursuant to the Santa Barbara County Air Pollution Control District's Environmental Review Guidelines (Santa Barbara County Air Pollution Control District 1995, revised 2000), Santa Barbara County Air Pollution Control District's Scope and Content of Air Quality Sections in Environmental Documents (2020), the Santa Barbara County's Environmental Thresholds and Guidelines Manual (2008), the State of California Environmental Quality Act (California Environmental Quality Act) (Public Resources Code 21000 to 21177) and California Environmental Quality Act Guidelines (California Code of Regulations Title 14, Division 6, Chapter 3, Sections 15000 – 15387).

This Air Quality Impact Analysis provides: a general Project description; a discussion of applicable environmental thresholds; the regulatory and environmental setting related to air quality in the Project area; identification of air quality impacts of the proposed Project, Project alternatives, cumulative impacts; and recommended mitigation measures to reduce air quality impacts (if applicable).

### 2.2 General Project Description

The project includes construction of a new truck loading rack and associated infrastructure on an existing production pad associated with production well Purisima 33 (hereafter, Purisima 33 refers to the pad itself). Project components include new P-140 Lease Automatic Custody Transfer (LACT) charge pumps, LACT Unit, truck loading rack with impervious secondary containment suitable to load one (1) 160-barrel truck at a time, hydrogen sulfide (H<sub>2</sub>S) removal system, Volatile Organic Compound (VOC) removal system, automatic shut-off valve, H<sub>2</sub>S and reactive organic compound monitors, approximately 493 feet of new aboveground pipeline to connect existing infrastructure to the truck loading rack, the removal and replacement of one (1) power pole, and the installation of four (4) new power poles. The proposed truck loading rack will connect to the existing Sentinel Peak Resources 4" Oil Shipping Line, the production shipped through the proposed truck rack is under the ownership of Sentinel Peak Resources. The majority of the existing 4" line is above ground except at road crossings. Impervious surfaces necessary for secondary spill containment will encompass approximately 19,000 square feet (SF), all of which will be constructed on existing developed areas. Net fill is estimated to equal approximately 550 cubic yards (CY).

The proposed truck rack will be installed on an existing production pad within the Lompoc Oil Field, located immediately north of the Freeport-McMoRan operated Lompoc Oil and Gas Plant, east of Harris Grade Road. The truck loading rack will encompass approximately 11,000 SF of the existing, developed pad and will include a new 4" oil line extension connecting to the existing 4" oil shipping line. All proposed work associated with the truck loading rack construction will be restricted to the existing developed production pad and existing access roads. The Applicant proposes to install bollards with safety rails around the wellhead of Purisima 33 to shield it from truck traffic. All equipment and material staging areas would occur on existing production pads and roadways, or within the developed Lompoc Oil Treatment Facility; no new areas of disturbance will be utilized for staging. Access to work areas will be via existing paved and unpaved roadways under the ownership of Sentinel Peak Resources. The site improvements will include a new v-ditch and AC berm to divert run-on around the loading rack pad to a new storm drain inlet. The storm drain will connect to a new drain line buried under the existing previously disturbed lease road. The drain line will terminate into a new rip-rap energy dissipater directing stormwater flow into the existing drainage. Additionally, the loading rack/Purisima 33 pad will have a new containment berm installed to capture potential spills and stormwater on the pad. The new pad drain will be valved and will follow existing requirements per our Industrial SWPPP prior to flowing into a new drain line installed under the existing

previously disturbed well pad. The drain line will then connect to the new v-ditch drain line under the existing previously disturbed lease road.

The Applicant does not anticipate any increase in the throughput of oil, water, and gas following the installation of the truck loading rack. Please note that the aforementioned proposed commodities, production, and equipment are under the ownership of the Applicant. The proposed project will require minimal grading to the pad as the existing surface is level. Construction of containment berms and paving of the existing access roads will occur during construction. No new habitable structures, landscaping, parking, or utilities (e.g., water and sewer) are proposed as part of this project. Existing power is routed to the pad; however, a portion will be rerouted to allow equipment access. The reroute will require the removal and replacement of one (1) power pole and the installation of four (4) new power poles. The electrical system is owned and operated by the Applicant. The proposed Project will require trimming a small number of oak trees along the access roads to Purisima 33 to allow overhead clearance of roadways. Currently, there are eight (8) full-time employees working in the field and there will be no change in the number of full-time employees as a result of this project. Overall, project-related permanent impacts comprise approximately 31,000 SF, all of which will be restricted to previously disturbed areas immediately adjacent to existing developed areas. The project proposes to add approximately 24,500 SF of impervious surfaces.

There is no specific development or phasing start date, however SPR proposes to complete construction of the project site within three (3) to six (6) months. Construction activities will occur during the day for eight (8) hour periods, five (5) days per week. Construction crews will utilize the following equipment:

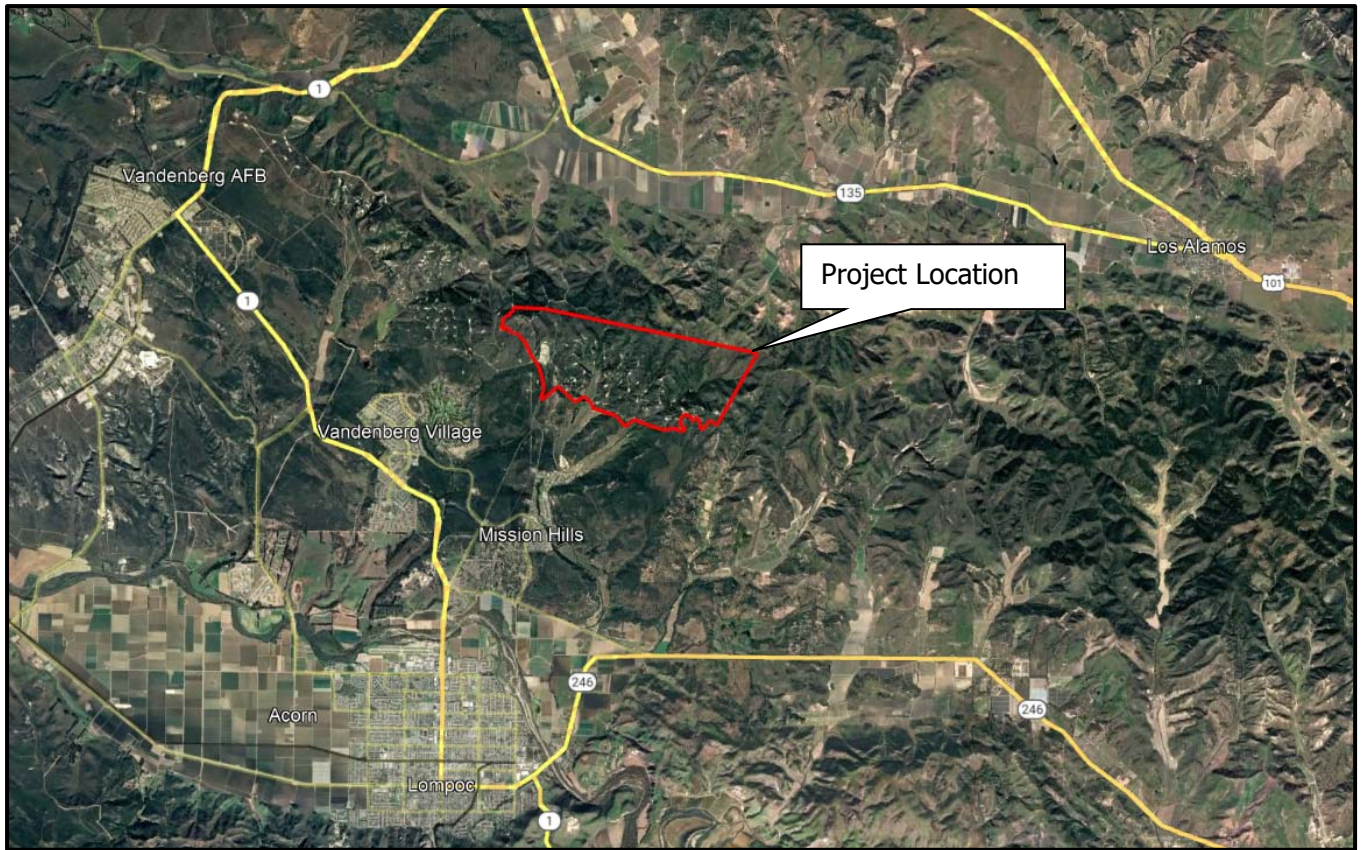
- ▶ Cement Mixer;
- ▶ Paver;
- ▶ Roller;
- ▶ Loader;
- ▶ Backhoe;
- ▶ Motor Grader;
- ▶ Elevating Scraper;
- ▶ Dump Truck;
- ▶ Crew Truck;
- ▶ Welding Truck; and
- ▶ Crane.

SPR expects approximately eight (8) to ten (10) construction workers on site during a given time. Grading activities consist of scraping 6" off the existing pad/road and adding 6" of compacted aggregate base for impervious containment. The above-mentioned equipment will be removed from the project site upon cessation of construction activities.

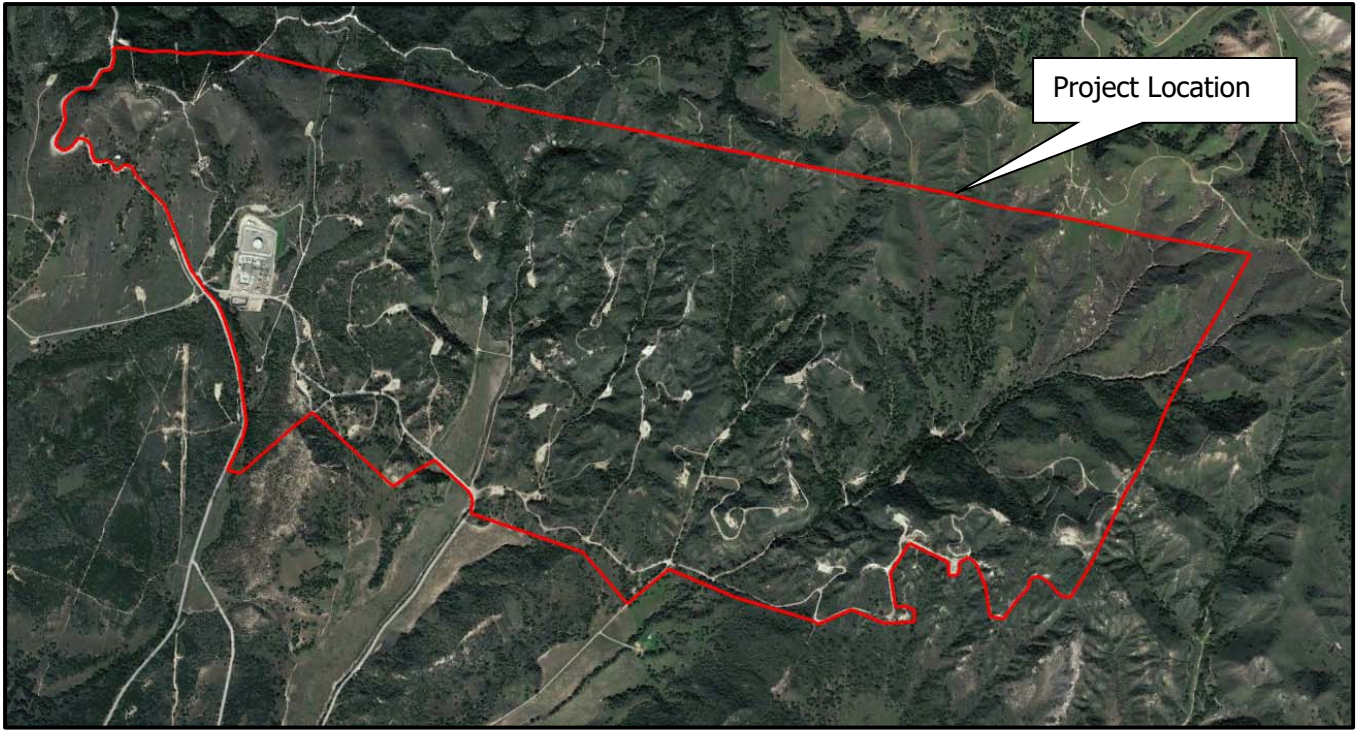
The Project site is located within the existing Sentinel Peak Resources Lompoc Facility located north of Lompoc, CA in the County of Santa Barbara. **Figure 2-1** depicts the regional location and **Figure 2-2** depicts an aerial view of the Project location.



**Figure 2-1. Regional Location**



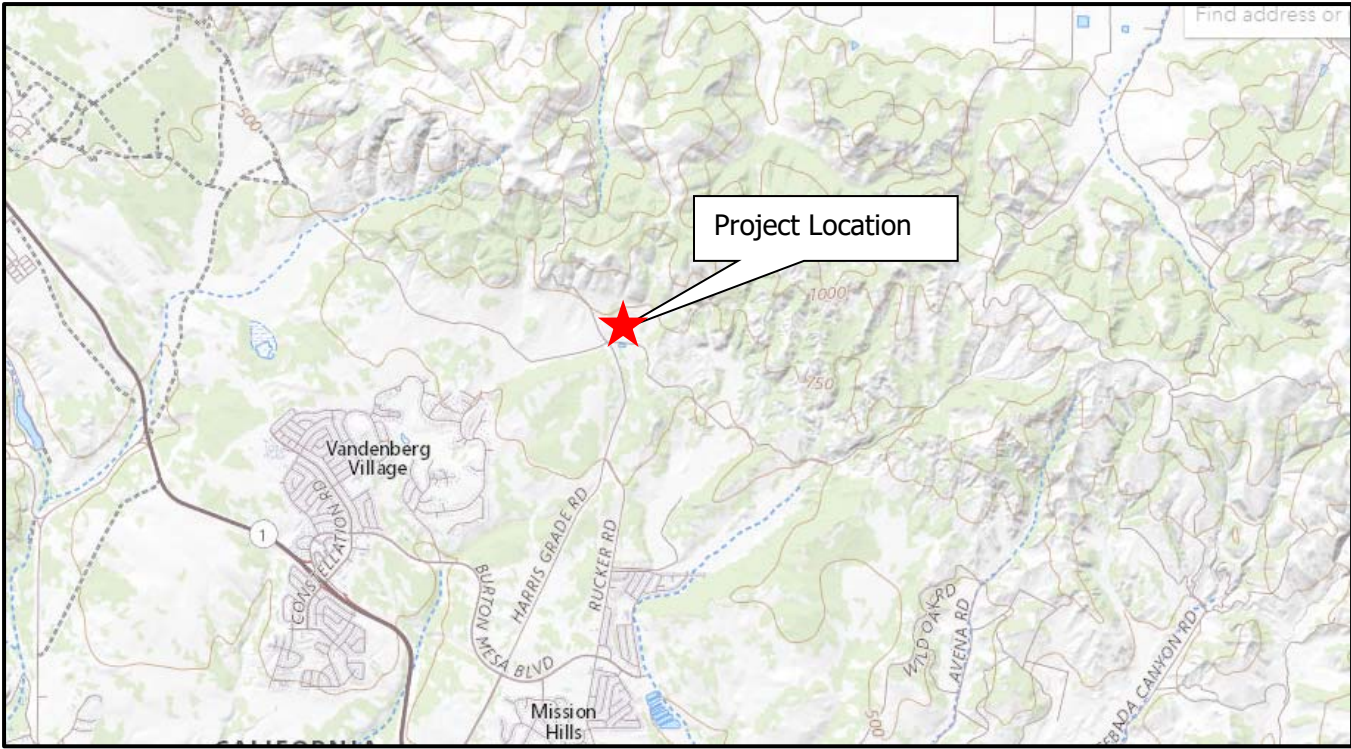
**Figure 2-2. Project Location**



**Figure 2-3** depicts the Project site's topography based on United States Geological Survey's (USGS) National Map (USGS 2019). The Project site is located at an elevation of approximately 700 feet above mean sea level and is surrounded by residential, educational, and agricultural land uses.



Figure 2-3. Project Site Topography



### 3. SANTA BARBARA COUNTY ENVIRONMENTAL THRESHOLDS

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#### 3.1 Operational Thresholds for Criteria Pollutants

The thresholds used to determine whether or not there is the potential for a significant impact are from Santa Barbara County Environmental Thresholds and Guidelines Manual (Santa Barbara County 2021). A proposed Project would have a less than significant air quality impact on the environment if operation of the Project will:

- ▶ Emit (from all Project sources, mobile and stationary) less than the daily trigger for offsets set in the Air Pollution Control District's New Source Review Rule 802 (55 pounds per day for reactive organic compounds and nitrogen oxides and 80 pounds per day for particulate matter);
- ▶ Emit less than 25 pounds per day of nitrogen oxides or reactive organic compounds from motor vehicle trips only;
- ▶ Not cause or contribute to a violation of any National Ambient Air Quality Standards or California Ambient Air Quality Standards (except ozone);
- ▶ Not allow land uses that create objectionable odors or expose sensitive receptors to objectionable odors;
- ▶ Not exceed the Air Pollution Control District's health risk public notification thresholds adopted by the Air Pollution Control District Board for air toxics (i.e., ten in a million cancer risk and an acute and chronic hazard indices of one); and
- ▶ Be consistent with the adopted Federal and State air quality plans.

The State of California Environmental Quality Act Guideline §15355 defines cumulative impacts as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impact." The individual effects may be changes resulting from a single project and more than one project (California Environmental Quality Act Guidelines §15355(a).) Cumulative impacts may result from individually minor but collectively significant projects taking place over a period of time. (California Environmental Quality Act Guidelines §15355(b)).

#### 3.2 Construction Thresholds for Criteria Pollutants

Emissions from construction activities are normally short-term. Currently, neither the County nor the Santa Barbara County Air Pollution Control District have daily or quarterly quantifiable emission thresholds established for short-term construction emissions. The Final 2019 Ozone Air Plan (SBCAPCD 2019) and the Santa Barbara County Environmental Thresholds and Guidelines Manual (SBC 2021) require that PM<sub>10</sub> impacts from construction dust emissions be discussed in the Air Quality Impact Analysis and that standard mitigation measures be implemented (e.g., watering). The Santa Barbara County Air Pollution Control District's *Scope and Content of Air Quality Sections in Environmental Documents* states "Although quantitative thresholds of significance are not currently in place for short-term emissions, California Environmental Quality Act requires that short-term impacts, such as exhaust emissions from construction equipment and fugitive dust generation during grading, be discussed in the environmental document". However, the Santa Barbara County Air Pollution Control District requires construction projects that emit more than 25 tons per year to obtain emission offsets under Rule 804 and would consider these emissions to be significant under California Environmental Quality Act. Santa Barbara County Air Pollution Control District Rule 202 (related to permits and offset requirements and exemptions), Section D.16, requires that:

*"Notwithstanding any exemption in these rules and regulations (Rule 202), if the combined emissions from all construction equipment used to construct a stationary source which requires an Authority to Construct*

*have a projected actual in excess of 25 tons of any pollutant, except carbon monoxide, in a 12 month period, the owner of the stationary source shall provide offsets...”*

### **3.3 Greenhouse Gas Emission Thresholds**

The California Natural Resources Agency amended the Guidelines for Implementation of the California Environmental Quality Act in 2009, placing requirements on California Environmental Quality Act Lead Agencies about the treatment of greenhouse gas emissions in environmental documents. Among other things, these amendments established that lead agencies must “...make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate, or estimate the amount of greenhouse gas emissions resulting from a project”. These amendments further obligate the lead agency to consider if the estimated amount of greenhouse emissions from a proposed project exceeds a threshold of significance that the lead agency determines to apply to the project, and consider 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 greenhouse gas emissions.

The Santa Barbara County Air Pollution Control District recently established a greenhouse gas significance threshold. According to the Santa Barbara County Air Pollution Control District’s revised Environmental Review Guidelines, a proposed stationary source project will not have a significant greenhouse gas impact, if operation of the project will:

- ▶ Emit less than the screening significance level of 10,000 metric tons per year carbon dioxide equivalent, or
- ▶ Show compliance with an approved greenhouse gas emission reduction plan or greenhouse gas mitigation program which avoids or substantially reduces greenhouse gas emissions (sources subject to the Assembly Bill 32 Cap-and-Trade requirements pursuant to Title 17, Article 5 (California Cap on Greenhouse Gas Emissions and Market-based Compliance Mechanisms) would meet the criteria), or
- ▶ Show consistency with the Assembly Bill 32 Scoping Plan greenhouse gas emission reduction goals by reducing project emissions 15.3 percent below Business As Usual.

The County of Santa Barbara also established a greenhouse gas significance threshold in May of 2015. According to an approved amendment to the County of Santa Barbara’s Environmental Thresholds and Guidelines Manual, all industrial and stationary source projects would be subject to a bright-line threshold of 1,000 metric tons of carbon dioxide equivalent per year to determine if greenhouse gas emissions constitute a significant cumulative impact.

Projects exceeding the 1,000 metric tons of carbon dioxide equivalent per year significance threshold would be required to reduce their greenhouse gas emissions to the applicable threshold, where feasible, through onsite reductions and offsite reduction programs approved by the County of Santa Barbara. This county threshold will be used as the threshold to determine significance for this Project.

## 4. REGULATORY AND ENVIRONMENTAL SETTING

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### 4.1 Regulatory Setting

Federal, State, and local agencies have established air quality standards and regulations that govern the proposed Project. A summary is provided below.

#### **FEDERAL REGULATIONS**

The Federal Clean Air Act of 1970 directs the attainment and maintenance of the National Ambient Air Quality Standards. The 1990 Amendments to this Act addressed air pollutant emissions that affect local, regional, and global air quality. The main elements of the 1990 Clean Air Act Amendments are summarized below:

- ▶ Title I, Attainment and maintenance of National Ambient Air Quality Standards;
- ▶ Title II, Motor vehicles and fuel reformulation;
- ▶ Title III, Hazardous air pollutants;
- ▶ Title IV, Acid deposition;
- ▶ Title V, Facility operating permits (describes requirements for Part 70 permits);
- ▶ Title VI, Stratospheric ozone protection; and
- ▶ Title VII, Enforcement.

The U.S. Environmental Protection Agency is responsible for implementing the Federal Clean Air Act and establishing the National Ambient Air Quality Standards for the six "Criteria Pollutants": carbon monoxide, lead, nitrogen dioxide, sulfur dioxide, particulates, and ozone.

#### **STATE REGULATIONS**

##### **California Air Resources Board.**

The California Air Resources Board has jurisdiction over all air pollutant sources in the State and established the California Ambient Air Quality Standards. California Air Resources Board has delegated its authority for stationary sources to local air districts but has retained authority over emissions from mobile sources. Comparison of the criteria pollutant concentrations in ambient air to the California Ambient Air Quality Standards determines State attainment status for criteria pollutants in a given region. California Air Resources Board, in partnership with the local air quality management districts within California, has developed a pollutant monitoring network to aid attainment of California Ambient Air Quality Standards. The network consists of numerous monitoring stations located throughout California that monitor and report the ambient concentrations of criteria and related pollutants concentrations in air.

##### **California Clean Air Act (California Health and Safety Code, Division 26).**

The California Clean Air Act (California Health and Safety Code, Division 26) went into effect on January 1, 1989, and was amended in 1992. The California Clean Air Act mandates achieving the health-based California Ambient Air Quality Standards at the earliest practical date.

##### **Air Toxics "Hot Spots" Information and Assessment Act of 1987 – AB2588 (California Health and Safety Code, Division 26, Part 6).**

The Hot Spots Act requires an inventory of air toxics emissions from individual facilities, an assessment of health risk, and notification of potential significant health risk.

### **California Health and Safety Code Sections 25531–25543, The Calderon Bill (SB 1889).**

Sections 25531–25543 of the California Health and Safety Code set forth changes in the following four areas: 1) provide guidelines to identify a more realistic health risk; 2) require high-risk facilities to submit an air toxic emission reduction plan; 3) hold air pollution control districts accountable for ensuring that the plans will achieve their objectives; and 4) require high-risk facilities to achieve their planned emission reductions.

### **California Diesel Fuel Regulations**

With the California Diesel Fuel Regulations, the California Air Resources Board set sulfur limitations for diesel fuel sold in California for use in on-road and off-road motor vehicles. Under this rule, diesel fuel used in motor vehicles was limited to 500-parts per million sulfur since beginning in 1993. This sulfur limit was later reduced to 15-parts per million, effective September 1, 2006.

## **LOCAL**

Local Air Pollution Control Districts in California have jurisdiction over stationary sources in their respective areas and must adopt plans and regulations necessary to demonstrate attainment of Federal and State air quality standards. As directed by the Federal and State Clean Air Acts, local air districts are required to prepare plans with strategies for attaining and maintaining State and Federal ozone standards.

In the Project area, air quality rules are promulgated by the Santa Barbara County Air Pollution Control District. With few exceptions (including particulate emissions from mobile sources), most of the Santa Barbara County Air Pollution Control District Rules apply to stationary sources only, since California Air Resources Board retains authority for mobile air emissions sources. In order to ultimately achieve the air quality standards, the rules limit emissions and permissible impacts from the proposed Project. Some rules also specify emission controls and control technologies for each type of emitting source. The rules also include requirements for obtaining an Authority to Construct permit and a Permit to Operate.

### **Santa Barbara County Air Pollution Control District**

The Santa Barbara County Air Pollution Control District has jurisdiction over air quality attainment in the Santa Barbara County portion of the South Central Coast Air Basin. All aspects of the proposed Project occurring in Santa Barbara County must obtain a Santa Barbara County Air Pollution Control District permit, if applicable. The Santa Barbara County Air Pollution Control District also has jurisdiction over Outer Continental Shelf sources located within 25 miles (40 kilometers) of the seaward boundaries of the State of California (Rule 903). Increases in emissions of any non-attainment pollutant or its pre-cursor from a new or modified project that exceed the thresholds which have been identified in the Santa Barbara County Air Pollution Control District Regulation VIII, are required to be mitigated. Rules which apply to Onshore Petroleum Extraction and Processing are summarized below.

- ▶ *Rule 201, Permits Required* – Specifies the permits required for construction or operation of equipment that emits air contaminants.



- ▶ *Rule 301, Circumvention* – This rule prohibits the concealment of any activity that would otherwise constitute a violation of Division 26 (Air Resources) of the California Health and Safety Code and the Santa Barbara County Air Pollution Control District rules and regulations.
- ▶ *Rule 302, Visible Emissions* – limits discharge of visible emissions designated as No. 1 on the Ringelmann Chart to no more than three minutes in any hour.
- ▶ *Rule 303, Nuisance* – No discharges which cause injury, detriment, nuisance or annoyance are allowed.
- ▶ *Rule 304 (N), Particulate Matter, Northern Zone* – No discharges or any particulate matter in excess of 0.3 grain per cubic foot of gas at standard conditions are allowed.
- ▶ *Rule 305 (S), Particulate Matter Concentration, Southern Zone* - No discharges or any particulate matter in excess of the concentration shown in Table 305 (a).
- ▶ *Rule 309, Specific Contaminants* – No discharge of sulfur in excess of 0.2 percent by volume are allowed.
- ▶ *Rule 310, Odorous Sulfates* – These rules prohibit air emissions that cause a nuisance, e.g., odorous sulfates emitted near odor-sensitive receptors.
- ▶ *Rule 311, Sulfur Content of Fuels* – Limits burning of gaseous fuel containing high concentrations of sulfur.
- ▶ *Rule 317, Organic Solvents* – Limits discharge of organic solvent materials into atmosphere.
- ▶ *Rule 324, Disposal and Evaporation of Solvents* – Limits disposal of photochemically reactive solvents.
- ▶ *Rule 325, Crude Oil Production and Separation* – Places requirements on crude oil storage and handling.
- ▶ *Rule 326, Storage of Reactive Organic Compound Liquids* - Places requirements on crude oil and reactive organic compound liquids storage and handling.
- ▶ *Rule 331, Fugitive Emissions Inspection and Maintenance* – Sets limits and rules on liquid or gaseous hydrocarbon leaks.
- ▶ *Rule 342, Control of Oxides of Nitrogen* – Limits nitrogen oxide emissions from boilers, steam generators and process heaters.
- ▶ *Rule 343, Petroleum Storage Tank Degassing* – Places limits on tank degassing.
- ▶ *Rule 344, Petroleum Sumps, Pits, and Well Cellars* – Bans primary sumps and limits pits and post-primary sumps.
- ▶ *Rule 359, Flares and Thermal Oxidizers* – Places limits on flares and thermal oxidizers.
- ▶ *Rule 360, Emissions of Oxides of Nitrogen* – Limits nitrogen oxides from Large Water Heaters and Small Boilers.
- ▶ *Rule 361, Small Boilers, Steam Generators and Process Heaters* – Limits emissions from boiler, steam generator and process heater.
- ▶ *Rule 370, Potential to Emit – Limitations for Part 70 Sources* – Specifies actual emission level criteria below which Part 70 sources are exempt from Part 70 permit requirements.
- ▶ *Regulation XIII* – Defines criteria for Part 70 source applicability, and permit content and requirements for Part 70 sources.
- ▶ *Rule 802, Non-Attainment Review* – For new or modified emission sources, this rule specifies emission limits that would trigger emission offsets (25 tons/year for any non-attainment pollutant (except carbon monoxide and PM<sub>2.5</sub>), 240 pounds/day for any attainment pollutant (except carbon monoxide and PM<sub>2.5</sub>) and 150 pounds/day or 25 tons/year for carbon monoxide) or trigger Best Available Control Technology requirements (ex. 25 pounds/day for any non-attainment pollutant and 150 pounds/day for carbon monoxide). Note that currently, the area is in non-attainment for ozone (with nitrogen oxides and reactive organic compounds as ozone precursors) and particulate matter of 10 microns (with sulfur oxides as a particulate precursor).

## **CRITERIA AIR POLLUTANT STANDARDS**

Protection of the public health is maintained through the attainment and maintenance of standards for ambient concentrations of various criteria air pollutants in the atmosphere and the enforcement of emissions



limits for individual stationary sources. The Federal Clean Air Act requires that the Environmental Protection Agency establish National Ambient Air Quality Standards to protect the health, safety, and welfare of the public. National Ambient Air Quality Standards have been established for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter of 10 microns and particulate matter of less than 2.5 microns, and lead. California has also adopted California Ambient Air Quality Standards for these "criteria" air pollutants that are more stringent than the corresponding National Ambient Air Quality Standards along with standards for hydrogen sulfide, vinyl chloride (chloroethene) and visibility reducing particles. The Clean Air Act Amendments of 1977 required states to identify areas that were in non-attainment of the National Ambient Air Quality Standards and to develop State Implementation Plans containing strategies to bring these non-attainment areas into compliance. Current ambient air quality standards and the current designation/classification for both National Ambient Air Quality Standards and California Ambient Air Quality Standards are presented below.

Under the provisions of the Federal Clean Air Act, Santa Barbara County has been classified as non-attainment, attainment, unclassified/attainment or unclassified under the established National Ambient Air Quality Standards and California Ambient Air Quality Standards for various criteria pollutants. **Table 4-1** provides the National Ambient Air Quality Standards and California Ambient Air Quality Standards as well as Santa Barbara County's designation and classification based on the various criteria pollutants.

**Table 4-1 - Federal and California Standards and Santa Barbara County Attainment Status**

Pollutant	Averaging Time	Federal Standard	SBC Federal Attainment Status	State Standard	SBC State Attainment Status
<b>Ozone</b>	1-hour	Revoked	---	0.09 parts per million	Non-attainment
	8-hour**	0.070 parts per million	Attainment / Unclassifiable	0.070 parts per million	Non-attainment
<b>Particulate Matter (PM<sub>10</sub>)</b>	Annual arithmetic mean	revoked	---	20 µg/m <sup>3</sup>	Non-Attainment
	24-hour	150 µg/m <sup>3</sup>	Unclassified	50 µg/m <sup>3</sup>	Non-Attainment
<b>Particulate Matter (PM<sub>2.5</sub>)</b>	Annual arithmetic mean	12 µg/m <sup>3</sup>	Attainment / Unclassifiable	12 µg/m <sup>3</sup>	Attainment
	24-hour	35 µg/m <sup>3</sup>	Attainment / Unclassifiable	---	---
<b>Carbon Monoxide</b>	8-hour	9 parts per million (10 mg/m <sup>3</sup> )	Attainment / Unclassifiable	9 parts per million (10 mg/m <sup>3</sup> )	Attainment
	1-hour	35 parts per million (40 µg/m <sup>3</sup> )	Attainment / Unclassifiable	20 parts per million (23 mg/m <sup>3</sup> )	Attainment
<b>Nitrogen Dioxide</b>	Annual arithmetic mean	0.053 parts per million (100 µg/m <sup>3</sup> )	Attainment / Unclassifiable	0.030 parts per million (56 µg/m <sup>3</sup> )	Attainment
	1-hour	0.10 parts per million (188 µg/m <sup>3</sup> )	Attainment / Unclassifiable	0.18 parts per million (338 µg/m <sup>3</sup> )	Attainment
<b>Sulfur Dioxide</b>	24-hour	revoked	---	0.04 parts per million (105 µg/m <sup>3</sup> )	Attainment
	1-hour	0.075 parts per million (196 µg/m <sup>3</sup> )	Attainment / Unclassifiable	0.25 parts per million (655 µg/m <sup>3</sup> )	Attainment
<b>Sulfates</b>	24-hour	---	---	25 µg/m <sup>3</sup>	Attainment
<b>Lead</b>	30 day average	---	---	1.5 µg/m <sup>3</sup>	Attainment
	Rolling 3-month average	0.15 µg/m <sup>3</sup>	Attainment / Unclassifiable	---	---
<b>Hydrogen Sulfide</b>	1-hour	---	---	0.03 parts per million (42 µg/m <sup>3</sup> )	Attainment
<b>Vinyl Chloride (chloroethene)</b>	24-hour	---	---	0.01 parts per million (26 µg/m <sup>3</sup> )	---
<b>Visibility Reducing Particles</b>	8 hour (1000 to 1800 PST)	---	---	See Note #1	Unclassified

Definitions:  
 ppm = parts per million  
 ppb = parts per billion  
 mg/m<sup>3</sup> = milligrams per cubic meter  
 µg/m<sup>3</sup> = micrograms per cubic meter  
 SBC = Santa Barbara County

Notes:  
 #1: Statewide VRP Standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70 percent. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.  
 #2: Recent EPA federal registers have established that the "Attainment/Unclassifiable" designation is clearer than "Unclassifiable/Attainment", and that re-ordering the terms has no regulatory consequence.

Source: Santa Barbara County Air Pollution Control District 2023

The California Air Resources Board operates an air quality monitoring network that provides information on average concentrations of those pollutants for which state or Federal agencies have established National Ambient Air Quality Standards and California Ambient Air Quality Standards. Information from the Project area monitoring stations is available from the California Air Resources Board (2014) and presented below under Environmental Setting.

## **GREENHOUSE GAS EMISSIONS REGULATIONS**

### **Federal Greenhouse Gas Regulations**

#### *Clean Air Act*

The Environmental Protection Agency is developing standards for regulating greenhouse gas emissions from mobile and stationary sources under the Clean Air Act, Section 202(a). Two initiatives are underway to address mobile sources: 1) In coordination with the National Highway Traffic Safety Administration, steps are being taken to enable a new generation of clean vehicles to reduce up to 3,100 million metric tons of carbon dioxide emissions; and 2) the implementation of a Renewable Fuel Standard program to reduce greenhouse gas emissions by up to 138 million metric tons of carbon dioxide emissions. Three initiatives are underway to address stationary sources: 1) Establish new carbon pollution standards for power plants; 2) Implement the 2010 Final Greenhouse Gas Tailoring Rule; and 3) implement the Prevention of Significant Deterioration permitting program to greenhouse gas. The Environmental Protection Agency also oversees an emissions reporting program for greenhouse gas from large emission sources.

### **State Greenhouse Gas Regulations and Programs**

#### *Assembly Bill 32*

California's Assembly Bill 32 (AB-32) was signed into law by Governor Arnold Schwarzenegger on September 27, 2006. Assembly Bill 32 requires the state to reduce its global warming emissions to 1990 levels by the year 2020.

The Act authorizes the California Air Resources Board to adopt market-based compliance mechanisms including Cap-and-Trade, and allows a one-year extension of the targets under extraordinary circumstances. The regulatory steps laid out in AB-32 require California Air Resources Board to: adopt early action measures to reduce greenhouse gases; establish a State-wide greenhouse gas emissions cap for 2020 based on 1990 emissions; adopt mandatory reporting rules for significant source of greenhouse gases; and adopt a scoping plan indicating how emission reductions will be achieved via regulations, market mechanisms and other actions; and adopt the regulations needed to achieve the maximum technologically feasible and cost-effective reductions in greenhouse gases.

In June 2007, California Air Resources Board adopted three discrete early action measures which include the following: a low carbon fuel standard; reduction of HFC-134a emissions from non-professional servicing of motor vehicle air conditioning systems; and improved landfill methane capture. California Air Resources Board estimates that by 2020 the reductions from those three discrete early action measures would be approximately 13 million metric tons to 26 million metric tons carbon dioxide-equivalent (CAPCOA 2008).

#### *Senate Bill 32*

Senate Bill 32 (SB-32) requires that there be a reduction in GHG emissions to 40% below the 1990 levels by 2030. The provisions of SB-32 were added to Section 38566 of the Health and Safety Code subsequent to the bill's approval. The bill went into effect January 1, 2017. SB-32 builds onto AB-32 which requires California to reduce greenhouse gas emissions to 1990 levels by 2020 and SB-32 continues that timeline to

reach targets set in Executive Order B-30-15. SB-32 provides another intermediate target between the 2020 and 2050 targets set in Executive Order S-3-05.

#### *California Air Resources Board: Scoping Plan*

On December 11, 2008, the California Air Resources Board adopted the Scoping Plan as directed by Assembly Bill 32, and approved its first update in 2014 and its second update in 2017 (California Air Resources Board 2008; updated 2014 and 2017). The Scoping Plan proposes a set of actions designed to reduce overall greenhouse gas emissions in California. The actions include a Cap-and-Trade system, car standards, low carbon fuel standards, landfill gas control methods, energy efficiency, green buildings, renewable electricity standards, and refrigerant management programs.

The Scoping Plan provides an approach to reduce emissions to achieve the 2020 target, and to initiate the transformations required to achieve the 2050 target. The 2008 Scoping Plan indicates that a 29 percent reduction below the estimated "business as usual" levels would be necessary to return to 1990 levels by 2020. The 2011 supplement (Functional Equivalent Document) to the Scoping Plan emission inventory revisions indicated that a 16 percent reduction below the estimated "business as usual" levels would be necessary to return to 1990 levels by 2020. This revision was due to the slowing economy between 2008 and 2010.

California businesses are required to report their annual greenhouse gas emissions. This requirement is contained within sections 95100-95133 of Title 17, California Code of Regulations. It establishes who must report greenhouse gas emissions to the California Air Resources Board and sets forth the requirements for measuring, calculating, reporting and verifying those emissions. The rule specifies a reporting threshold of 10,000 metric tons of carbon dioxide.

#### *California Climate Action Registry General Reporting Protocol*

The California Climate Action Registry is a program of the Climate Action Reserve and serves as a voluntary greenhouse gas registry. The California Climate Action Registry was formed in 2001 when a group of chief executive officers, who were investing in energy efficiency projects that reduced their organizations' greenhouse gas emissions, asked the state to create a place to accurately report their emissions history. The California Climate Action Registry publishes a General Reporting Protocol, which provides the principles, approach, methodology, and procedures to estimate such emissions.

#### *California Air Resources Board Mandatory Reporting Regulation*

The Air Resources Board approved a mandatory reporting regulation in December 2007, which became effective January 2009 (which appears at sections 95100-95133 of Title 17, California Code of Regulations), which required the mandatory reporting of greenhouse gas emissions for specific industries emitting more than 10,000 metric tons of carbon dioxide equivalent per year.

#### *Resolution 18-52*

Amendments to the regulation for the mandatory reporting of Greenhouse gases were adopted on December 13, 2018. The update provides guidance for reporting for facilities with emissions below applicable reporting requirements, data requirements and calculation methods for certain emissions devices.

#### *California Air Resources Board Cap-and-Trade Regulation*

An element of the Assembly Bill 32 Scoping Plan to reduce greenhouse gas is a Cap-and-Trade system applicable to specific industries that emit more than 25,000 metric tons of carbon dioxide equivalent per year. The program places an overall cap or limit on greenhouse gas emissions. Industries subject to the Cap-and-Trade systems then must lower emissions by engaging in the Cap-and-Trade system. The program

started on January 1, 2012, with an enforceable compliance obligation beginning with the 2013 emissions from stationary sources. Beginning in 2013, the petroleum and natural gas systems sector stationary and related combustion, process vents, and flare emissions were subject to cap and trade if the total emissions from these sources at any one facility exceeded 25,000 metric tons of carbon dioxide equivalent per year. Starting in 2015, suppliers of Natural Gas and transportation fuels will be subject to Cap-and-Trade for combustion emissions from natural gas deliveries made to non-covered entities or used for transportation fuels.

#### *Senate bill 350*

With the Clean Energy and Pollution Reduction Act of 2015 (SB 350), signed into law on October 7, 2015, California expanded the specific set of objectives to be achieved by 2030, with the following:

- To increase the Renewable Portfolio Standard (RPS) from 33 percent to 50 percent for the procurement of California's electricity from renewable sources; and
- To double the energy efficiency savings in electricity and natural gas end uses by retail customers.

*California Air Resources Board Regulation for Emissions Standards for Crude Oil and Natural Gas Facilities*  
CARB approved regulations, effective October 1, 2017 (17 CCR 95665-95677) to reduce CH<sub>4</sub> emissions from oil and gas production, processing, storage, and transmission compressor stations by requiring regulated entities to take actions to limit intentional (vented) and unintentional (leaked or fugitive) emissions from active and idle equipment and operations (CARB, 2016d). These types of controls would also have the effect of reducing emissions of ozone-precursor VOCs. The regulation helps to implement the AB 32 Scoping Plan and the statewide strategy for short-lived climate pollutants (CARB, 2016a) through the following requirements:

- Vapor collection on uncontrolled oil and water separators and storage tanks with emissions above a set CH<sub>4</sub> standard;
- Vapor collection on all uncontrolled well stimulation circulation tanks;
- Leak Detection and Repair (LDAR) on components, such as valves, flanges, and connectors, currently not covered by local air district rules, as well as from soil at underground natural gas storage well sites;
- Vapor collection of large reciprocating compressors' vent gas, or require repair of the compressor when it is leaking above a set emission flow rate;
- Vapor collection of centrifugal compressor vent gas, or replacement of higher emitting "wet seals" with lower emitting "dry seals";
- "No bleed" pneumatic devices and pumps; and
- More frequent CH<sub>4</sub> monitoring at underground natural gas storage facilities.

#### *AB-398 California Global Warming Solutions Act of 2006*

AB-398, approved July 17, 2017 amended The California Global Warming Solutions Act of 2006 and extends the Cap and Trade Program from January 1, 2012 to December 31, 2030 and provides for a price ceiling and other measures to improve and provide additional banking allowance rules.

#### *SB-100 California Renewables Portfolio Standard Program*

SB-100, introduced in January 2017, would revise the California Renewables Portfolio Standard Program to state that the goal of the program is to achieve that 50% renewable resources target by December 31, 2026, and to achieve a 60% target by December 31, 2030. The bill states that it is the policy of the state that eligible renewable energy resources and zero-carbon resources supply 100% of retail sales of electricity to serve California end-use customers and 100% of electricity procured to serve all state agencies by December 31, 2045. The bill was signed by the Governor in September 2018.

### *Executive Order B-55-18*

The Governor signed this Executive Order in September 2018 that sets a new statewide goal to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter. This goal supplements the existing statewide targets of reducing greenhouse gas emissions.

### *Short-Lived Climate Pollution Reduction Strategy*

In March 2017 CARB released the Short-Lived Climate Pollutant Reduction Strategy which identified the need to immediately reduce emissions of short-lived climate pollutants (SLCPs), which include black carbon (soot), methane (CH<sub>4</sub>), and fluorinated gases (F-gases, including hydrofluorocarbons, or HFCs). The plan outlines goals for reductions by 2030 for black carbon (50%), methane (40%), and HFCs (40%) and emission reduction actions that provide a wide array of climate, health, and economic benefits throughout the State.

### *The Process for Analyzing Greenhouse Gas Emission related to CEQA:*

#### *Senate Bill 97 – California Environmental Quality Act: Greenhouse Gas Emissions*

In August 2007, Governor Schwarzenegger signed into law Senate Bill 97 – California Environmental Quality Act: Greenhouse Gas Emissions stating, "This bill advances a coordinated policy for reducing greenhouse gas emissions by directing the Office of Planning and Research and the Resources Agency to develop California Environmental Quality Act guidelines on how state and local agencies should analyze, and when necessary, mitigate greenhouse gas emissions."

Specifically, Senate Bill 97 required the Office of Planning and Research, by July 1, 2009, to prepare, develop, and transmit to the Resources Agency guidelines for the feasible mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions, as required by California Environmental Quality Act, including, but not limited to, effects associated with transportation or energy consumption. Office of Planning and Research would be required to periodically update the guidelines to incorporate new information or criteria established by the California Air Resources Board pursuant to the California Global Warming Solutions Act of 2006. Senate Bill 97 also identifies a limited number of types of projects that would be exempt under California Environmental Quality Act from analyzing greenhouse gas emissions.

On January 7, 2009, the Office of Planning and Research issued its draft California Environmental Quality Act guidelines revisions pursuant to Senate Bill 97. On March 16, 2010, the Office of Administrative Law approved the Amendments, and filed them with the Secretary of State for inclusion in the California Code of Regulations. The Amendments became effective on March 18, 2010.

Consistent with Senate Bill 97, on March 18, 2010, the California Environmental Quality Act Guidelines were amended to include references to greenhouse gas emissions. The amendments offer guidance regarding the steps lead agencies should take to address climate change in their California Environmental Quality Act documents. According to office of planning and research, lead agencies should determine whether greenhouse gas may be generated by a Proposed Project, and if so, quantify or estimate the greenhouse gas emissions by type and source. Second, the lead agency must assess whether those emissions are cumulatively significant. When assessing whether a Project's effects on climate change are cumulatively considerable, even though its greenhouse gas contribution may be individually limited, the lead agency must consider the impact of the Project when viewed in connection with the effects of past, current, and probable future projects. Finally, if the lead agency determines that the greenhouse gas emissions from the Proposed Project are potentially significant, it must investigate and implement ways to avoid, reduce, or otherwise mitigate the impacts of those emissions. The Amendments do not identify a threshold of significance for

greenhouse gas emissions, nor do they prescribe assessment methodologies or specific mitigation measures. The Preliminary Amendments maintain California Environmental Quality Act discretion for lead agencies to establish thresholds of significance based on individual circumstances.

The guidelines developed by the Office of Planning and Research provide the lead agency with discretion in determining what methodology is used in assessing the impacts of greenhouse gas emissions in the context of a particular Project. This guidance is provided because the methodology for assessing greenhouse gas emissions is expected to evolve over time. The Office of Planning and Research guidance also states that the lead agency can rely on qualitative or other performance based standards for estimating the significance of greenhouse gas emissions.

## 4.2 Environmental Setting

### CLIMATE AND METEOROLOGY

Santa Barbara County and the South Central Coast Air Basin has a Mediterranean climate characterized by mild winters and warm, dry summers. The influence of the Pacific Ocean causes mild temperatures year-round along the coast, while inland areas experience a wider range of temperatures. The wind blows predominantly from the west and northwest and to a lesser extent from the east and southeast. Wind speeds average five miles per hour with occasional gusts above 30 miles per hour.

**Table 4-2** summarizes the 2021 climatic data collected at the Santa Maria weather station, the closest recording station to the Project area providing data to the public.

**Table 4-2 - 2021 Climatic Data for the Project Area**

Parameter	Santa Maria Data
Mean Daily Temperature range	43-70, degrees Fahrenheit
Range Maximum Daily Temperature	44-89, degrees Fahrenheit
Range Minimum Daily Temperature	32-60, degrees Fahrenheit
Annual Precipitation	11.19 inches
Peak Winds, miles per hour	26-55 (gust)

Source: Wunderground History for Santa Maria, 2021

### EXISTING AIR QUALITY

For the purposes of background data and this air quality assessment, this analysis relied on data collected in the last three years for the California Air Resources Board monitoring stations that are located in the closest proximity to the proposed Project site. **Table 4-3** provides the background concentrations for ozone, particulate matter of 10 microns, particulate matter of less than 2.5 microns, carbon monoxide, nitrogen dioxide, sulfur dioxide, and lead. Information is provided for the Lompoc monitoring station on South H Street for 2019 through 2021. No data is available for hydrogen sulfide, Vinyl Chloride or other toxic air contaminants in Santa Barbara County.



**Table 4-3 - Existing Air Quality Monitoring Data in Project Area**

Pollutant and Monitoring Station Location	Maximum Concentration			Days Exceeding Standard		
	2019	2020	2021	2019	2020	2021
<b>O<sub>3</sub> – 1-hour CAAQS (0.09 ppm)</b>						
Lompoc – S H Street	0.041	0.038	0.040	0	0	0
<b>O<sub>3</sub> – 8-hour CAAQS (0.07 ppm)</b>						
Lompoc – S H Street	0.034	0.034	0.035	0	0	0
<b>O<sub>3</sub> – 8-hour NAAQS (0.075 ppm)</b>						
Lompoc – S H Street	0.033	0.030	0.035	0	0	0
<b>PM<sub>10</sub> – 24-hour CAAQS (50 µg/m<sup>3</sup>)</b>						
Lompoc – S H Street	83.5	110.8	76.0	3	17	1
<b>PM<sub>10</sub> – 24-hour NAAQS (150 µg/m<sup>3</sup>)</b>						
Lompoc – S H Street	80.0	106.7	73.1	0	0	0
<b>PM<sub>2.5</sub> - 24-hour NAAQS (35 µg/m<sup>3</sup>)</b>						
Lompoc – S H Street	23.4	85.6	18.4	0	8	0
<b>CO - 8-Hour CAAQS and NAAQS (9.0 ppm)</b>						
Lompoc – S H Street	*	*	*	*	*	*
<b>NO<sub>2</sub> - 1-Hour CAAQS (0.18 ppm)</b>						
Lompoc – S H Street	0.027	0.028	0.027	0	0	0
<b>NO<sub>2</sub> - 1-Hour NAAQS (0.10 ppm)</b>						
Lompoc – S H Street	0.027	0.028	0.027	0	0	0
<b>SO<sub>2</sub> – 24-hour Concentration - CAAQS (0.04 ppm) and NAAQS (0.14 ppm)</b>						
Lompoc – S H Street	*	*	*	*	*	*
Definitions: ppm= parts per million NAAQS = National Ambient Air Quality Standards CAAQA = California Ambient Air Quality Standards O <sub>3</sub> = Ozone PM <sub>10</sub> = particulate matter up to 10 micron in diameter PM <sub>2.5</sub> = particulate matter up to 2.5 micron in diameter CO = Carbon Monoxide NO <sub>2</sub> = Nitrogen Dioxide SO <sub>2</sub> = Sulfur Dioxide						
Notes: * There was insufficient (or no) data available to determine the value.						

Source: California Air Resources Board 2023

The following is a description of criteria pollutants, typical sources and health effects and the recently documented pollutant levels in the Project vicinity.

**Ozone**

Ozone is commonly known as smog. It is created in a photochemical process by emissions from nitrogen oxides and volatile organic compounds. High levels of ozone can cause eye irritation and impair respiratory functions in humans. People with lung disease, children, older adults, and people who are active outdoors may be particularly sensitive to ozone. High levels of ozone can also affect plants and materials.

Significant ozone generation requires about one to three hours in a stable atmosphere with precursor pollutants and strong sunlight. For this reason, the months of April through October generally comprise the "ozone season." Ozone is a regional pollutant because ozone precursors (nitrogen oxides and volatile organic compounds) are transported and diffused by wind concurrently with the reaction process. The data contained



in **Table 4-3** shows that for the 2019 through 2021 period, the Project area has not exceeded the State 1-hour average ambient ozone standard or the Federal and State 8-hour average ambient ozone standards.

### **Suspended Particulate Matter**

Suspended Particulate Matter pollution consists of airborne particles resulting from many kinds of sources, including industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities including wind-raised dust and ocean spray. The largest sources of suspended particulate matter in Santa Barbara County are vehicle movements over paved and unpaved roads, demolition and construction activities, farming/cattle grazing operations, and unplanned fires.

Both state and federal air quality standards exist for suspended particulate matter smaller than 10 microns, which are referred to as "PM<sub>10</sub>". After studies showed that the smaller-diameter suspended particulates represented a greater health hazard, the Environmental Protection Agency and the State of California established additional ambient air quality standards for particulate matter of less than 2.5 microns, known as "PM<sub>2.5</sub>".

Particulate matter up to 10 microns in diameter and particulate matter of less than 2.5 microns are considered regional pollutants in Santa Barbara County with elevated levels typically occurring over a wide geographic area. Concentrations tend to be highest in the winter, during periods of high atmospheric stability and low wind speed. In the respiratory tract, very small particles of certain substances may produce injury by themselves, or may contain absorbed gases that are injurious. Particulates of aerosol size suspended in the air can both scatter and absorb sunlight, producing haze and reducing visibility. They can also damage materials.

The Project area is classified as nonattainment under the California ambient air quality standards for particulate matter up to 10 microns in diameter and as attainment under the National ambient air quality standards for particulate matter up to 10 microns in diameter and particulate matter of less than 2.5 microns.

**Table 4-3** shows that particulate matter up to 10 microns in diameter levels at the Lompoc monitoring station exceeded the California ambient air quality standard for particulate matter up to 10 microns in diameter over the three-year period of 2019 through 2021, but did not exceed the national ambient air quality standard for particulate matter up to 10 microns in diameter and particulate matter of less than 2.5 microns.

### **Carbon Monoxide**

Ambient carbon monoxide concentrations normally correspond closely to the spatial and temporal distributions of vehicular traffic. Relatively high concentrations of carbon monoxide would be expected along heavily traveled roads and near busy intersections. Wind speed and atmospheric mixing also influence carbon monoxide concentrations; however, under inversion conditions prevalent in the South Central Coast Air Basin, carbon monoxide concentrations may be more uniformly distributed over a broad area.

Internal combustion engines, principally in vehicles, produce carbon monoxide due to incomplete fuel combustion. Various industrial processes also produce carbon monoxide emissions through incomplete combustion. Gasoline-powered motor vehicles are typically the major source of this contaminant. Carbon monoxide does not irritate the respiratory tract, but passes through the lungs directly into the blood stream, and by interfering with the transfer of fresh oxygen to the blood, deprives sensitive tissues of oxygen, thereby aggravate cardiovascular disease, causing fatigue, headaches, and dizziness. Carbon monoxide is not known to have adverse effects on vegetation, visibility, or materials.

**Table 4-3** reports carbon monoxide levels at the Lompoc monitoring station were not recorded during the 2019 to 2021 monitoring period. Historically, Lompoc data for carbon monoxide has been below the California Ambient Air Quality Standards and National Ambient Air Quality Standards.

### **Nitrogen Dioxide and Hydrocarbons**

Santa Barbara County has been designated as an attainment area for the National Ambient Air Quality Standards for nitrogen dioxide. Mobile sources and oil and gas production account for a large proportion of the county's nitrogen oxide emissions, most of which is emitted as nitrogen dioxide. Combustion in motor vehicle engines, power plants, refineries and other industrial operations are the primary sources in the region. Railroads and aircraft are other potentially significant sources of combustion air contaminants. Oxides of nitrogen are direct participants in photochemical smog reactions. The emitted compound, nitric oxide, combines with oxygen in the atmosphere in the presence of hydrocarbons and sunlight to form nitrogen dioxide and ozone. Nitrogen dioxide, the most significant of the nitrogen oxide pollutants, can color the atmosphere at concentrations as low as 0.5 parts per million on days of ten mile visibility. Nitrogen oxide is a significant air pollutant in the region as a precursor to photochemical smog but it also reacts in the air to form nitrate particulates.

Motor vehicles are the major source of reactive hydrocarbons in the basin. Other sources include evaporation of organic vapors from solvents, paints, coatings, fugitive gas leaks in connectors, valves or seals associated with petroleum production, refining, storage, dispensing, and transportation. Certain hydrocarbons can damage plants by inhibiting growth and by causing flowers and leaves to fall. Levels of hydrocarbons currently measured in urban areas are not known to cause adverse effects in humans. However, certain members of this contaminant group are important components in the reactions, which produce photochemical oxidants.

**Table 4-3** shows that the Federal or State nitrogen dioxide standards have not been exceeded at the Lompoc monitoring station during the three-year period from 2019 through 2021. Hydrocarbons are not currently monitored.

### **Sulfur Dioxide**

Santa Barbara County has been designated as an attainment area for the National Ambient Air Quality Standards for sulfur dioxide. Sulfur dioxide is the primary combustion product of sulfur, or sulfur containing fuels. Fuel combustion is the major source of this pollutant, while chemical plants, sulfur recovery plants, and metal processing facilities are minor contributors. Gaseous fuels (natural gas, propane, etc.) typically have lower percentages of sulfur containing compounds than liquid fuels such as diesel or crude oil. Sulfur dioxide levels are generally higher in the winter months. Decreasing levels of sulfur dioxide in the atmosphere reflect the use of natural gas in power plants and boilers.

At high concentrations, sulfur dioxide irritates the upper respiratory tract. At lower concentrations, when respirated in combination with particulates, sulfur dioxide can result in greater harm by injuring lung tissues. Sulfur oxides, in combination with moisture and oxygen, results in the formation of sulfuric acid, which can yellow the leaves of plants, dissolve marble, and oxidize iron and steel. Sulfur oxides can also react to produce sulfates that reduce visibility and sunlight.

**Table 4-3** shows no recorded data for 2019 through 2021 in Lompoc.

## **Lead and Suspended Sulfate**

Ambient lead levels have dropped dramatically since California prohibited lead gasoline additives in 1982. Historic ambient lead levels in Santa Barbara County are well below the ambient standard and are expected to continue to decline. Suspended lead levels have stabilized to the point where no excesses of the State standard are expected in any given year.

## **Hazardous Air Pollutants**

Hazardous Air Pollutants are materials that are known or suspected to cause cancer, genetic mutations, birth defects, or other serious illnesses in humans. Hazardous Air Pollutants may be emitted from three main source categories: 1) industrial facilities; 2) internal combustion engines (stationary and mobile); and 3) small "area sources" (such as solvent use). The California Air Resources Board publishes lists of Volatile Organic Compound Species Profiles for many industrial applications and substances (California Air Resources Board 2006a). Generally, Hazardous Air Pollutants behave in the atmosphere in the same general way as inert pollutants (those that do not react chemically, but preserve the same chemical composition from point of emission to point of impact). The concentrations of toxic pollutants are therefore determined by the quantity and concentration emitted at the source and the meteorological conditions encountered as the pollutants are transported away from the source. Thus, impacts from toxic pollutant emissions tend to be site-specific and their intensity is subject to constantly changing meteorological conditions. The worst-case meteorological conditions that negatively affect short-term impacts are low wind speeds, highly stable air mass, and constant wind direction.

## **Odorous Compounds**

Several compounds associated with the oil and gas industry can produce odors that can be determined to be nuisances. Sulfur compounds, found in oil and gas, have very low odor threshold levels. For instance, hydrogen sulfide can be detected by two percent of the human population at concentrations as low as 0.5 parts per billion. Concentrations of 40 parts per billion typically qualify as annoying to 50 percent of the population. These levels are significantly lower than concentrations that could affect human health: two parts per million [2,000 parts per billion] can cause headaches and increased airway resistance in asthmatics. Inhalation of more than 600 parts per million can be instantly lethal and inhalation of over 100 parts per million can be lethal if exposed to for more than 60 minutes [ERPG-3].

Many volatile compounds found in oil and gas (ethane and longer chain hydrocarbons) typically have petroleum or gasoline odor with various odor thresholds. Natural gas contains mostly methane (which is odorless), and, by law, must be odorized before being placed into a distribution pipeline. The various odorizing compounds used contain sulfur compounds having a very low odor threshold and can produce odors if released into the atmosphere.

## **GREENHOUSE GASES**

Greenhouse gases are defined as any gas that absorbs infrared radiation (heat) in the earth's atmosphere, including water vapor, carbon dioxide, methane, nitrous oxide and fluorocarbons. In general, most greenhouse gasses do not have a localized effect, but rather contribute to ambient concentrations that contribute to "global" climate effects.

Greenhouse gases lead to the trapping and buildup of heat in the atmosphere near the earth's surface, commonly known as the "greenhouse effect". The accumulation of greenhouse gases in the atmosphere influences the earth's temperature. Greenhouse gases are vital to life on Earth; without them Earth would be an icy planet (California Air Resources Board 2006). Emissions from human activities, such as the burning of fossil fuels, have elevated the concentration of these gases in the atmosphere. A warming trend of about 0.7 degrees Fahrenheit to 1.5 degrees Fahrenheit reportedly occurred during the 20<sup>th</sup> century, and a number of scientific analyses indicate that rising levels of greenhouse gases in the atmosphere may be contributing to climate change (Environmental Protection Agency 2000).

If the average temperature of the Earth increases significantly, some scientists predict that weather may be affected, including changes in precipitation patterns, accumulation of snow pack, and intensity and duration of spring snowmelt. There may be rises in sea level, resulting in coastal erosion and inundation of coastal areas. Emissions of air pollutants and ambient levels of pollutants also may be affected in areas. Climate zones may change, affecting the ecology and biological resources of a region. There may be changes in fire hazards due to the changes in precipitation and climate zones.

Greenhouse gases have varying global warming potential. The global warming potential is the potential of a gas or aerosol to trap heat in the atmosphere. Because greenhouse gases absorb different amounts of heat, a common reference gas (carbon dioxide) is used to relate the amount of heat absorbed to the amount of the gas emissions, referred to as the "carbon dioxide equivalent". This is the amount of greenhouse gases emitted multiplied by the global warming potential. The global warming potential of carbon dioxide is defined as one, whereas the global warming potential of methane, for example, is 21, meaning that methane gas absorbs 21 times as much heat, and therefore has 21 times greater impact on global warming per pound of emissions, as carbon dioxide.

Carbon dioxide is an odorless, colorless greenhouse gas. Natural sources of carbon dioxide include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic (human caused) sources of carbon dioxide include burning fuels, such as coal, oil, natural gas, and wood. Average atmospheric carbon dioxide concentrations were 398.55 parts per million during 2014 (National Oceanic and Atmospheric Administration, 2015). However, some believe that concentrations may increase to 540 parts per million by 2100 as a direct result of anthropogenic sources and result in an average global temperature rise of at least two degrees Celsius (3.6 degrees Fahrenheit) (IPCC 2007).

Methane gas is the main component of natural gas used in homes. As discussed above, it has a global warming potential of about 21. Natural sources of methane arise from the decay of organic matter. Decayed organic matter trapped in geological deposits can be extracted as natural gas, which is used for fuel. Other sources of decaying organic material that are sometimes also used as fuel include landfills, sewage treatment plants, and animal manure.

Nitrous oxide is a colorless gas with a global warming potential of about 310 that is produced by microbial processes in soil and water, including those reactions which occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (nylon production, nitric acid production) also emit nitrogen dioxide. It is used in rocket engines, as an aerosol spray propellant, and in race cars. During combustion, nitrogen oxide (nitrogen oxides is a generic term for mono-nitrogen oxides, nitric oxide and nitrogen dioxide) is produced as a criterion pollutant (see above), and is not the same as nitrous oxide. Very small quantities of nitrous oxide may be formed during fuel combustion by reaction of nitrogen and oxygen (API 2004).

Chlorofluorocarbons are gases formed synthetically by replacing all hydrogen atoms in methane or ethane with either chlorine and/or fluorine atoms. Chlorofluorocarbons are nontoxic, nonflammable, insoluble, and chemically nonreactive in the troposphere (the level of air at the earth’s surface). Chlorofluorocarbons were first synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. They destroy stratospheric ozone; therefore, their production was stopped as required by the Montreal Protocol. Hydrofluorocarbons are synthetic man-made chemicals that are used as a substitute for Chlorofluorocarbons in automobile air conditioners and refrigerants. Perfluorocarbons are used in aluminum production and semiconductor manufacture industry. In general, fluorocarbons have a global warming potential of between 140 and 11,700.

Sulfur hexafluoride is an inorganic, odorless, colorless, nontoxic, nonflammable gas. It also has the highest global warming potential of any gas at 23,900. Sulfur hexafluoride is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

Ozone is a greenhouse gas; however, unlike the other greenhouse gases, ozone in the troposphere is relatively short-lived and therefore is not global in nature. According to California Air Resources Board, it is difficult to make an accurate determination of the contribution of ozone precursors (nitrogen oxides and volatile organic compounds) to global warming (California Air Resources Board 2006b).

**Table 4-4** shows a range of gasses that contribute to greenhouse gas warming with their associated global warming potential.

**Table 4-4 - Global Warming Potential of Various Gases**

<b>Gas</b>	<b>20-Year Global Warming Potential (average)</b>
Carbon Dioxide	1
Methane	25
Nitrous Oxide	298
HFC-23	14,800
HFC-32	675
HFC-125	3,500
HFC-134a	1,430
HFC-143a	4,470
HFC-152a	124
HFC-227ea	3,220
HFC-236fa	9,810
HFC-4310mee	1,640
CF4	7,390
C2F6	12,200
C4F10	8,860
C6F14	9,300
SF6	22,800

Source: Environmental Protection Agency 2021

Fossil fuel combustion represents the vast majority of the anthropogenic greenhouse gas emissions, with carbon dioxide being the primary greenhouse gas. The total U.S. greenhouse gas emissions were 7,260 million

metric tons of carbon equivalents in 2005, of which 84 percent were carbon dioxide emissions (Environmental Protection Agency 2014).

California greenhouse gas emissions would rank 16th largest in the world. In 2012, California produced 459 million metric tons of carbon dioxide equivalent greenhouse gas emissions; this is a decrease of 1.6 percent from 2000 emissions (California Air Resources Board 2014b). The transportation sector is the single largest category of California's greenhouse gas emissions, producing approximately 40 percent of the State's total greenhouse gas emissions in 2012. Electrical generation produced approximately 24 percent of greenhouse gas emissions. Most of California's emissions, 80 percent, are carbon dioxide produced from fossil fuel combustion (California Air Resources Board 2014b).

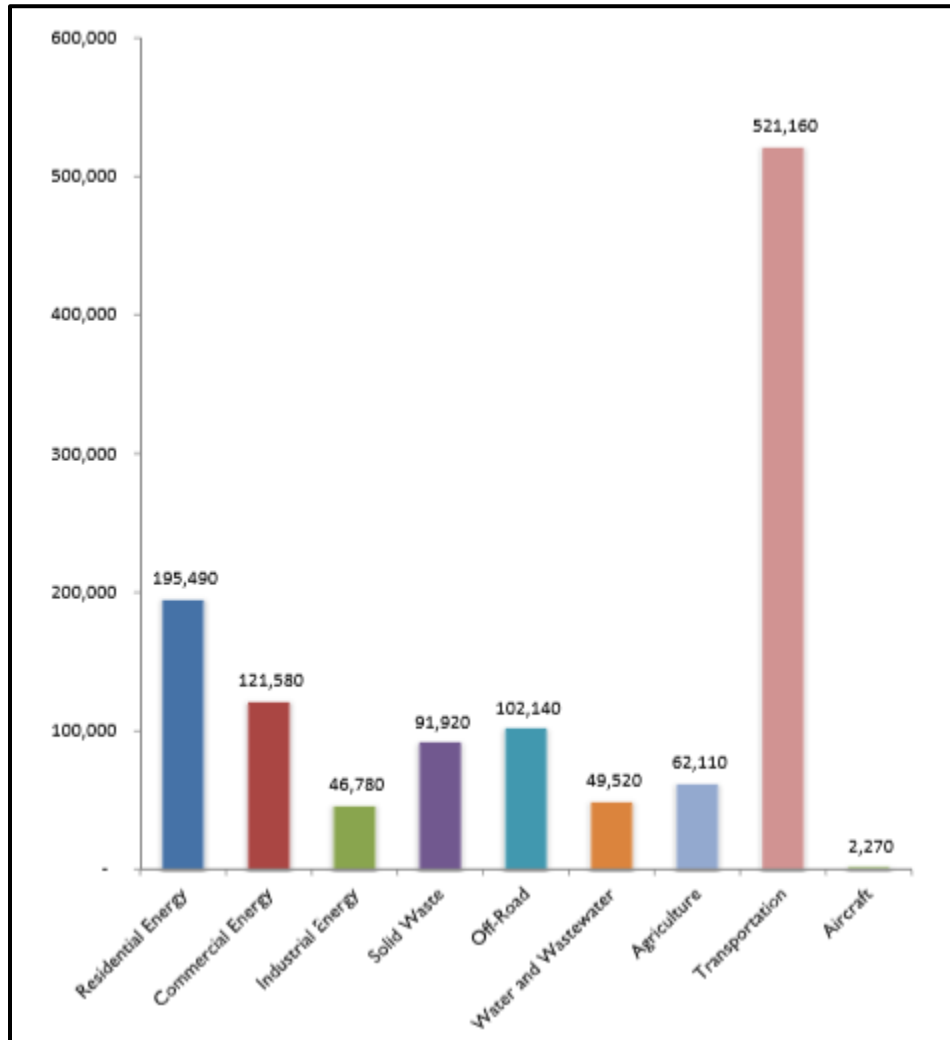
### **Countywide Greenhouse Gas Emissions**

The Santa Barbara County Climate Action Strategy (2011) was developed to address greenhouse gas emissions pursuant to the Santa Barbara County Board of Supervisors' March 2009 direction (Board of Supervisors Resolution 09-059) "to take immediate, cost effective, and coordinated steps to reduce the County's collective greenhouse gas emissions." Phase 1 was the preparation of a Climate Action Study, and Phase 2 is the development of a Climate Action Plan. The Study included: a greenhouse gas inventory and forecast for the unincorporated County; a discussion of greenhouse gas emission reduction target options that the County could pursue; a list of current County activities which reduce greenhouse gas emissions; evaluation of potential additional emission reduction measures the County could implement; and recommendations for implementation of the Study through an Energy and Climate Action Plan Summary Information (Santa Barbara County 2013).

The Energy and Climate Action Plan was adopted in May 2015 and seeks to reduce Santa Barbara County's greenhouse gas emissions through implementation of emission reduction measures with the goal of achieving a greenhouse gas reduction target of 15 percent below baseline emissions by the year 2020. The Energy and Climate Action Plan serves as a qualified greenhouse gas reduction strategy consistent with the California Environmental Quality Act (Santa Barbara County 2015).

**Figure 4-1** depicts Santa Barbara County's 2007 greenhouse gas emissions inventory by sector; total greenhouse gas emissions were estimated at approximately 1.19 million tonnes in 2007 (Santa Barbara County 2015).

**Figure 4-1 - 2007 Unincorporated Santa Barbara County Greenhouse Gas Emissions by Sector**



Source: Santa Barbara County 2015

**Calculation of Greenhouse Gas Emissions**

The quantification of greenhouse gas emissions associated with a Project can be complex and relies on several assumptions. Greenhouse gas emissions impacts are global, not local. Emissions are generally classified as either direct or indirect emissions are produced at the Project site. These would include the combustion of natural gas in heaters or stoves, the combustion of fuel in engines and construction vehicles, and fugitive emissions from valves, seals, and connectors. Indirect emissions are emissions created as part of the Project, but created outside of the Project site, including electrical power purchased from the grid, and transportation used to bring goods and materials to the Project site.

This report utilizes the California Climate Action Registry General Reporting Protocol (California Climate Action Registry 2009), the California Air Resources Board Compendium of Emission Factors and Methods to Support Mandatory Reporting of Greenhouse Gas Emissions (California Air Resources Board 2007), EMFAC2014, and California Emissions Estimator Model as methods to calculate greenhouse gas emissions. Indirect greenhouse



gas emissions associated with trash hauling and other transportation services are included in the total diesel truck emissions.

## COUNTYWIDE CRITERIA POLLUTANT EMISSION INVENTORY

California Air Resources Board maintains emissions inventories for criteria air pollutants for stationary, area-wide, and mobile sources. **Table 4-5** presents the California Air Resources Board data for 2020 within Santa Barbara County. Stationary sources include power plants, refineries and manufacturing facilities. Area-wide sources are estimated from consumer products, fireplaces, road dust and agricultural operations. Mobile sources account for on-road (automobiles, motorcycles and trucks) and off-road vehicle (off-road engines and equipment, recreational vehicles, farm and construction equipment, locomotives, and marine vessels) operations. Mobile sources account for 77 percent of carbon monoxide emissions and 93 percent of nitrogen oxide emissions.

**Table 4-5 - 2020 Emission Inventory for Santa Barbara County**

<b>Emission Sources</b>	<b>Carbon Monoxide Tons/Year</b>	<b>Reactive Organic Gas Tons/Year</b>	<b>Nitrogen Oxide Tons/Year</b>	<b>Sulfur Oxides Tons/Year</b>	<b>Particulate Matter (PM<sub>10</sub>) Tons/Year</b>	<b>Particulate Matter (PM<sub>2.5</sub>) Tons/Year</b>
Stationary	3,030	3,942	1,825	402	402	183
Area-wide	2,701	3,395	292	0	4,417	913
Mobile	21,207	2,837	22,083	475	475	329
All Sources	26,974	10,184	23,725	876	5,293	1,424

Source: California Air Resources Board 2023

## COUNTYWIDE AIR TOXICS

Air toxics are materials that are known or suspected to cause cancer, genetic mutations, birth defects, or other serious illnesses in humans. Air toxics may be emitted from three main source categories: 1) industrial facilities; 2) internal combustion engines (mobile and stationary); and 3) small area sources (such as solvent use). California Air Resources Board publishes lists of Volatile Organic Compound Species Profiles for many industrial applications and substances (California Air Resources Board 2013).

Generally, air toxics behave in the atmosphere in the same general way as inert pollutants (those that do not react chemically, but preserve the same chemical composition from point of emission to point of impact). The concentrations of toxic pollutants are therefore determined by the quantity and concentration emitted at the source and the meteorological conditions encountered as the pollutants are transported away from the source. Thus, impacts from toxic pollutant emissions tend to be site-specific and their intensity is subject to constantly changing meteorological conditions. The worst-case meteorological conditions that negatively affect short-term impacts are low wind speeds, highly stable air mass, and constant wind direction.



## 5. PROJECT-IMPACT ANALYSIS FOR CRITERIA POLLUTANTS

This Air Quality Impact Analysis was prepared pursuant to the Santa Barbara County Air Pollution Control District's Environmental Review Guidelines (Santa Barbara County Air Pollution Control District 1995, revised 2000), Santa Barbara County Air Pollution Control District's Scope and Content of Air Quality Sections in Environmental Documents (2020), the Santa Barbara County's Environmental Thresholds and Guidelines Manual (2008), the California Environmental Quality Act (Public Resources Code 21000 to 21177) and California Environmental Quality Act Guidelines (California Code of Regulations Title 14, Division 6, Chapter 3, Sections 15000 – 15387).

### 5.1 Impact AQ-1: Short-Term Construction Emissions

Short-term emissions will be produced from the Project's construction activities and are recognized to be short in duration and without lasting impacts on air quality.

#### **Equipment Exhaust**

California Emissions Estimator Model was used to estimate short-term emissions from construction equipment using a specific list and schedule. The construction plan provided by SPR detailed the various types and quantity of each type of equipment and the timeframe it would be used. Default equipment horsepower and load factors from California Emissions Estimator Model were utilized. Below is the estimated equipment listing:

- ▶ Cement Mixer – 1 day
- ▶ Paver – 1 day
- ▶ Roller – 1 day
- ▶ Loader – 1 day
- ▶ Backhoe – 2 Weeks
- ▶ Motor Grader – 2 Weeks
- ▶ Elevated Scraper – 2 Weeks
- ▶ Dump truck – 2 Weeks
- ▶ Crew Truck – 3-6 months (modeled as 6 months)
- ▶ Welding Truck – 3 months (modeled as 6 months and 4 hours per day)
- ▶ Crane – 3-6 months (modeled as 6 months)

#### **Fugitive Dust**

California Emissions Estimator Model was used to estimate short-term fugitive dust emissions from grading and cut and fills. The area of disturbance for grading (**Table 5-1**) and cut and fill volumes (**Table 5-1**) were provided by SPR and input into California Emissions Estimator Model.

**Table 5-1 - Grading Area and Cut and Fill Volumes**

<b>Year</b>	<b>Grading Area (acres/year)</b>	<b>Fill Volumes (cubic yards)</b>	<b>Cut Volumes (cubic yards)</b>
2023	0.71	700	150

**Offsite Mobile Exhaust**

California Emissions Estimator Model was used to estimate short-term emissions from employees and vendor travel. California Emissions Estimator Model default trip distance were used and all travel was assume to be paved surfaces.

**Short-Term Emissions**

**Tables 5-2** the short-term unmitigated emissions calculated for this Project. The output from the California Emissions Estimator Model run is available in **Attachment A**.

**Table 5-2 - Project Short Term Unmitigated Construction Emissions**

Year	Total Emissions						
	ROC (tons/yr)	CO (tons/yr)	NOx (tons/yr)	SOx (tons/yr)	PM <sub>10</sub> (tons/yr)	PM <sub>2.5</sub> (tons/yr)	CO <sub>2e</sub> (MT/yr)
2023	0.08	0.53	0.70	0.002	0.03	0.03	169.46
Definitions: CO = carbon monoxide NOx= nitrogen oxide PM <sub>10</sub> = particulate matter of 10 microns PM <sub>2.5</sub> = particulate matter of less than 2.5 microns ROC = reactive organic compound SOx = sulfur oxide CO <sub>2e</sub> = carbon dioxide equivalent MT = metric ton							

As calculated with California Emissions Estimator Model, using the anticipated equipment listing and schedule, the short-term unmitigated emissions are predicted *not to exceed* the County of Santa Barbara’s significance threshold levels for nitrogen oxides, particulate matter of 10 microns and carbon dioxide equivalences. Dust control mitigation measures are required under the Santa Barbara County’s Grading Ordinance for most projects. Mitigation Measures AQ-1a and AQ-1b below are required for all projects involving earthmoving activities regardless of the project size or duration. The measures are based on policies adopted in the 1979 Air Quality Attainment Plan for Santa Barbara County. As shown in **Table 5-3**, with implementation of Mitigation Measures AQ-1a and AQ-1b, all potential short-term emissions would continue to be at a less than significant level. Greenhouse Gas emissions and mitigation measures are further discussed in **Section 7.0**.

**Table 5-3** below summarize the short term mitigated emissions calculated for this Project.

**Table 5-3 - Project Short Term Mitigated Construction Emissions**

Year	Total Emissions						
	ROC (tons/yr)	CO (tons/yr)	NOx (tons/yr)	SOx (tons/yr)	PM <sub>10</sub> (tons/yr)	PM <sub>2.5</sub> (tons/yr)	CO <sub>2e</sub> (MT/yr)
2023	0.08	0.53	0.70	0.002	0.03	0.03	169.46
Definitions CO = carbon monoxide NOx= nitrogen oxide PM <sub>10</sub> = particulate matter of 10 microns PM <sub>2.5</sub> = particulate matter of less than 2.5 microns ROC = reactive organic compound SOx = sulfur oxide CO <sub>2e</sub> = carbon dioxide equivalent MT = metric ton							

### **Mitigation Measure AQ-1**

- a) During construction, use water trucks or sprinkler systems to keep all areas of vehicle movement damp enough to prevent dust from leaving the site. The Project should water exposed unpaved traffic areas two to three times per day or as needed, and with increasing frequency when wind speed exceeds 15 miles per hour. Reclaimed water should be used if available and practicable. Soil binders may be used instead of water if practical. The amount of disturbed area will be minimized. Vehicle speeds on unpaved roads will be limited to 15 miles per hour or less. If stockpiling of fill material is required, soil stockpiled for more than two days will be covered, kept moist, or treated with soil binders to mitigate dust generation. Trucks transporting fill material to and from the site will be covered with a tarp from the point of origin. Gravel pads or shakers will be installed at external access points to prevent tracking mud onto public roads. After clearing, grading, earth moving, or excavation is completed, disturbed areas will be watered, re-vegetated, or otherwise controlled to mitigate dust generation.
- b) If applicable, all non-exempt portable diesel-powered construction equipment will be registered with the state's portable equipment registration program OR will obtain a Santa Barbara County Air Pollution Control District permit. Fleet owners of mobile construction equipment are subject to the California Air Resource Board Regulation for In-use Off-road Diesel Vehicles (Title 13 California Code of Regulations, Chapter 9, § 2449), the purpose of which is to reduce diesel particulate matter and criteria pollutant emissions from in-use (existing) off-road diesel-fueled vehicles. For more information, please refer to the California Air Resources Board website at [www.arb.ca.gov/msprog/ordiesel/ordiesel.htm](http://www.arb.ca.gov/msprog/ordiesel/ordiesel.htm). All commercial diesel vehicles are subject to Title 13, § 2485 of the California Code of Regulations, limiting engine idling time. Idling of heavy-duty diesel construction equipment and trucks during loading and unloading will be limited to five minutes; electric auxiliary power units will be used whenever possible.

Because construction related emissions will be below the County of Santa Barbara's thresholds before and after implementation of the above-described Mitigation Measures AQ-1a and AQ-1b, implementation of the Project would therefore have *less than significant* short-term construction-related criteria pollutant impacts. No additional mitigation measures would be required for criteria pollutants from construction activities.

## **5.2 Impact AQ-2: Long-term Operations Emissions**

Long-term emissions are caused by operational mobile sources and stationary source equipment. Mobile sources from this Project generate exhaust emissions and fugitive dust from travel on paved roadways. Stationary sources would generate fugitive emissions.

### **Mobile Source Emissions**

Mobile source emissions from this Project include engine emissions from tanker truck trips traveling to and from the Project site. Emitted pollutants would include reactive organic gases, nitrogen oxides, sulfur oxides, carbon monoxide, particulate matter of 10 microns, particulate matter of less than 2.5 microns, and greenhouse gasses.

EMFAC2021 emission factors were used to estimate long-term engine emissions from tanker truck trip. Diesel fueled tanker truck trips will have 2,000 annual round trips. On rare circumstances up to 10 daily round trips may be necessary. A tanker truck round trip was estimated to be 330 miles. Diesel fueled heavy-heavy-duty trucks commonly used for commercial transport (EMFAC2021 describes this category as T7 Tractor Class 8)

were assumed for all truck trips using an average speed of 50 miles per hour and aggregate model years options in EMFAC2021.

**Stationary Source Emissions**

At final build-out, the stationary source equipment that will emit criteria pollutants will consist of a truck loading rack.

*Loading Rack*

The loading rack emissions were estimated using the Santa Barbara County Air Pollution Control District’s Loading Rack Emissions Calculator version 4.2. The following assumptions were used in the calculator:

- ▶ Facility operates 24 hours per day, 365 days per year.
- ▶ The daily maximum crude oil truck loading will be 1,600 barrels (To account for the rare circumstances where 10 trucks with a 160-barrel storage capacity are necessary).
- ▶ The annual maximum crude oil truck loading will be 320,000 barrels (2,000 trucks a year, with a 160-barrel storage capacity)
- ▶ Loading rate is 320 barrels per hour.
- ▶ Daily max loading will be 5 hours. Annual loading will be 1,000 hours.
- ▶ The crude oil loading temperature is 130 degrees Fahrenheit with a molecular weight of 50 pounds per pound-mole and a true vapor pressure of 0.50 pounds per square inch.
- ▶ The loading rack will utilize submerged loading dedicated normal service vessels.
- ▶ Submerged loading: Dedicated vapor balance service (Saturation Factor 0.60).
- ▶ Vapor recovery efficiency = 0.95.
- ▶ ROC/THC Reactivity = 0.885.
- ▶ Greenhouse gas emissions are based solely on the methane fraction of the ROC emissions and applying the Global Warming Potential factor of one ton methane equals 25 tons of carbon dioxide equivalent.

*Fugitive Leaks*

Emissions would also occur from fugitive leaks from equipment components. The fugitive leak emissions were calculated in a worksheet using the Component Leak Path Methodology. The following assumptions were used in the worksheet:

- ▶ Expected emissions are calculated using Santa Barbara County Air Pollution Control District component leak path methodology equations based on a Rule 331 fugitive leak inspection program.
- ▶ The facility will be designed and built to comply with the District’s Rule 331 Best Available Control Technology standards as found in Air Pollution Control District Form-31.
- ▶ Greenhouse gas emissions are based solely on the methane fraction of the ROC emissions and applying the Global Warming Potential factor of one ton methane equals 25 tons of carbon dioxide equivalent.
- ▶ Reactive organic compounds/Total Hydrocarbon ratio is 56 percent per Table 2 of the Santa Barbara County Air Pollution Control District Policy 6100.061.1998.
- ▶ Estimated Project Component Counts:

**Table 5-4 - Facility Component Counts**

	<b>Valves</b>	<b>Connectors/Flanges</b>	<b>PSV to VRS</b>
Gas	42	387	2

**Projected Emissions**

**Table 5-5** presents the project’s long-term unmitigated emissions. Calculation and summary spreadsheets are available in **Attachment A**.

**Table 5-5 - Long Term Unmitigated Operational Emissions**

Activity	Total Emissions						
	ROC	CO	NOx	SOx	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2e</sub>
	(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(MT/yr)
Mobile Tankers	0.08	0.45	7.05	0.10	0.62	0.29	980.01
Stationary Equipment - Fugitives	7.05	-	-	-	-	-	10.80
Paved Roads Fugitive Dust Emissions	-	-	-	-	13.98	3.43	-
Unpaved Roads Fugitive Dust Emissions	-	-	-	-	10.39	1.04	-
Indirect Electricity	-	-	-	-	-	-	8.51
Peak Year Total	<b>7.13</b>	<b>0.45</b>	<b>7.05</b>	<b>0.10</b>	<b>24.99</b>	<b>4.76</b>	<b>999.32</b>
Significance Thresholds	55	NA	55	NA	80	NA	1,000
Significant?	No	No	No	No	No	No	No
Mobile Exhaust Only Significance Threshold	25	NA	25	NA	NA	NA	NA
Significant?	No	No	No	No	No	No	No
Definitions:							
CO =	carbon monoxide	ROC =	reactive organic compound				
NOx=	nitrogen oxide	SOx =	sulfur oxide				
PM <sub>10</sub> =	particulate matter of 10 microns	CO <sub>2e</sub> =	carbon dioxide equivalent				
PM <sub>2.5</sub> =	particulate matter of less than 2.5 microns	MT =	metric ton				
		lbs =	pounds				

As calculated, long-term unmitigated emissions are predicted *not to exceed* Santa Barbara County Air Pollution Control District and Santa Barbara County significance threshold levels for nitrogen oxides, reactive organic compounds, particulate matter of ten microns and carbon dioxide equivalencies. Therefore, no further mitigation needs to be applied and the project will have *less than significant* long-term operational-related impacts. Greenhouse Gas emissions and mitigation measures are further discussed in **Section 7.0**.

**5.3 Potential Odors Impact**

Odor thresholds are defined as the point at which a person can detect the substance by smell. According to the American Industrial Hygiene Association, the odor detection threshold is the lowest concentration of odorant that will elicit a sensory response in the olfactory receptors of a specified percentage of a given population (American Industrial Hygiene Association 1989). The annoyance level would be a higher concentration.

The proposed Project will be constructed at an existing oilfield facility. Therefore, the Project will not be introducing any new odors or higher concentration of odors at the facility. Therefore, odors from the proposed Project are not expected to significantly impact receptors and the impacts from odors are less than significant. No further mitigation is required for odor impacts from this Project.

## 5.4 Predicted Health Risk Impacts

According to Santa Barbara County Air Pollution Control District Modeling Guidelines for Health Risk Assessments (SBCAPCD 2020) a Health Risk Assessment must be completed for any of the following situations:

1. The District has determined that a Health Risk Assessment is necessary as part of the District's New Source Review permitting program.
2. A Health Risk Assessment is necessary as part of the California Environmental Quality Act process.
3. The District has determined that a Health Risk Assessment is necessary as part of the District's evaluation of the facility in the AB2588 Air Toxics "Hot Spots" program.

According to the above criteria a Health Risk Assessment is necessary for the proposed Project. In most circumstances, SBCAPCD recommends that for the purposes of CEQA analysis, an HRA should evaluate the post-project risk from the entire stationary source, not just the incremental risk from the proposed Project. However, in cases where a Project's facility is currently in the AB2588 "Hot Spots" program and will undergo an extensive evaluation of risk at the stationary source level, the SBCAPCD allows a project-level risk analysis. The project-level incremental risk must be less than 10% of the applicable stationary source health risk thresholds. Since this project is located at a facility that is currently in the AB2588 program, the significance risk threshold for this analysis will be one in a million for cancer risk and 0.1 for acute and chronic non-cancer risks.

### Facility Information

The proposed loading rack Project will be located at the Sentinel Peak Resources Lompoc Facility at 3902 Rucker Road in Lompoc, California. **Table 5-6** displays the Universal Transverse Mercator coordinates for 79 locations along the Project boundary. The Universal Transverse Mercator coordinates utilize the WGS84 Zone 10 North datum.

**Table 5-6 – Project Boundary UTM Coordinates**

<b>Location #</b>	<b>UTME (meters)</b>	<b>UTMN (meters)</b>	<b>Location #</b>	<b>UTME (meters)</b>	<b>UTMN (meters)</b>
1	736108.06	3844250.62	41	734128.87	3846123.31
2	736629.22	3844089.90	42	734120.41	3846084.80
3	736840.44	3843861.18	43	734134.39	3846028.58
4	737026.21	3844022.21	44	734097.67	3845934.92
5	737331.92	3843904.93	45	734097.39	3845903.13
6	737693.08	3843808.85	46	734131.12	3845882.78
7	737707.37	3843795.82	47	734166.57	3845900.37
8	737858.46	3843865.72	48	734197.64	3845945.86
9	738003.85	3843809.80	49	734232.62	3845942.72
10	738142.12	3843818.82	50	734256.63	3845909.89
11	738143.05	3843869.47	51	734265.41	3845863.41
12	738105.27	3843887.64	52	734280.73	3845839.17
13	738054.33	3843883.57	53	734309.09	3845837.18
14	738028.07	3844032.00	54	734335.99	3845847.09
15	738111.02	3844169.65	55	734363.06	3845826.01
16	738287.57	3844089.40	56	734373.01	3845801.87
17	738290.44	3844029.89	57	734388.39	3845801.58
18	738329.90	3844031.51	58	734418.84	3845829.54
19	738339.95	3844068.71	59	734450.36	3845819.21
20	738337.39	3844090.74	60	734471.91	3845779.88
21	738380.75	3844113.06	61	734616.27	3845639.74
22	738414.34	3844085.73	62	734734.55	3845383.71
23	738455.63	3843986.08	63	734753.85	3845341.62
24	738476.86	3843854.15	64	734831.20	3845242.58
25	738536.95	3843845.01	65	734880.60	3845196.00
26	738590.59	3843924.67	66	734909.50	3845143.45
27	738643.46	3843984.89	67	734954.26	3845032.83
28	738656.14	3844031.23	68	734996.95	3844909.55
29	738694.34	3844037.77	69	735049.66	3844640.52
30	738737.95	3844007.22	70	735038.59	3844577.35
31	738785.12	3843954.80	71	734972.89	3844419.46
32	738829.26	3843948.19	72	735035.96	3844406.99
33	739667.19	3845520.76	73	735353.50	3844695.09
34	735013.25	3846359.07	74	735736.43	3844366.17
35	734341.48	3846372.45	75	735924.92	3844491.92
36	734351.92	3846330.00	76	736088.83	3844353.49
37	734341.30	3846271.93	77	736106.34	3844321.97
38	734292.72	3846262.70	78	736111.22	3844299.24
39	734252.23	3846178.15	79	736104.42	3844267.09
40	734187.65	3846178.46			



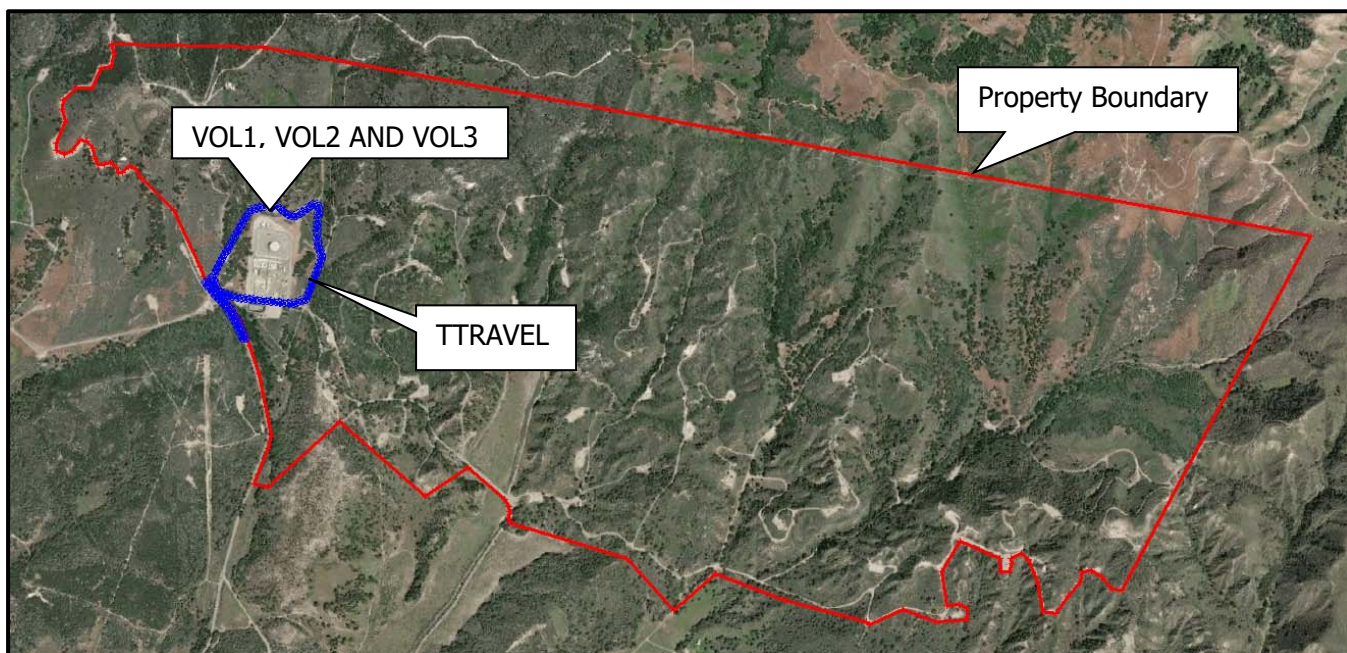
The Health Risk Assessment included 4 toxic substances. **Table 5-7** lists the Project's sources including the AERMOD source identification and hourly and annual emissions of each pollutant for each source.

**Table 5-7 – HRA Sources and Emissions**

Source	AERMOD ID	Pollutant	Annual Emissions (lb/yr)	Hourly Emissions (lb/hr)
Truck Travel	TTRAVEL	DPM	0.057	0
LACT	VOL1	Benzene	8.63E-03	9.86E-07
		Hexane	8.55E-01	9.76E-05
		H2S	6.48E-02	7.40E-06
Loading Rack	VOL2	Benzene	2.52	2.50E-03
		Hexane	249.1	2.48E-01
		H2S	3.00E-02	2.97E-05
Sulfatreat	VOL3	Benzene	8.63E-03	9.86E-07
		Hexane	8.55E-01	9.76E-05
		H2S	1.62E-04	1.85E-08

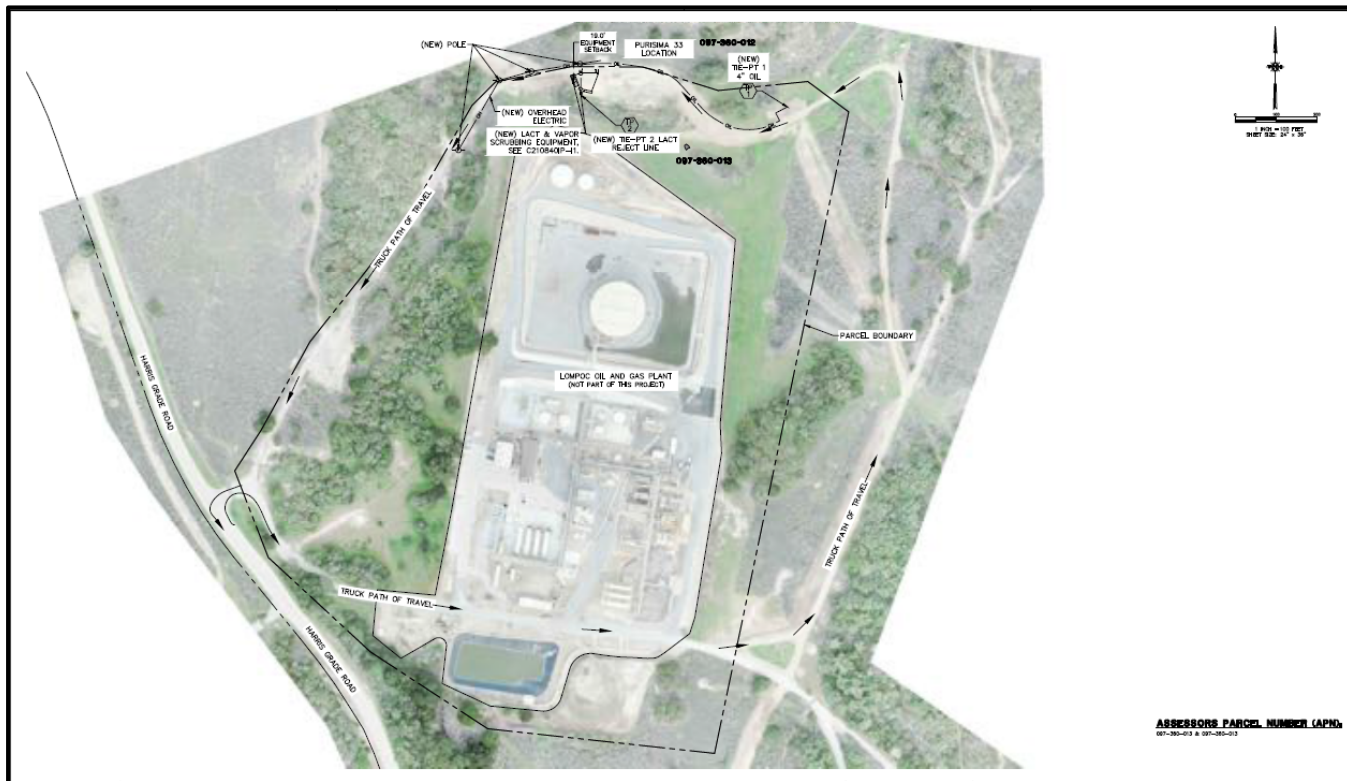
**Figure 5-1** depicts the facility boundary and emitting sources for the Project and **Figure 5-2** shows the facility plot plan.

**Figure 5-2 – HRA Facility Boundary and Emitting Sources**





**Figure 5-2 – Facility Plot Plan**



**Source Information**

The Health Risk Assessment consisted of two types of source releases, a line volume source and volume sources. Volume source releases were used for fugitive loading rack emissions and component leaks. The area of the volume sources were estimated to cover the anticipated area that components and equipment will be located. The line volume sources were used for onsite tanker truck travel and off-site travel up to 1,000 feet from the property boundary for tanker trucks. Line sources were mapped according to estimated travel routes. All sources including their AERMOD identification ID, release type, Universal Transverse Mercator coordinates (WGS84 Zone 10 North), and release parameters may be found in the HRA zipped modeling files under *SentinelHRA7\_Sources.xlsx*.

**Emission Quantification**

Emissions were quantified for the Project’s toxic substances that are identified as having a cancer or non-cancer acute or chronic risk on the California Air Resources Board’s Consolidated Table of Office of Environmental Health Hazard Assessment/Air Resources Board Approved Risk Assessment Health Values (CARB 2015).

Fugitive leak emissions from components and loading racks were calculated using California Air Resources Board’s speciation profiles and Project specific hydrogen sulfide concentrations. Diesel particulate matter emissions were calculated using EMFAC2021 for tanker truck travel. The Project’s toxic emission calculations may be found in the AQ zipped supporting document under *Project Emissions v6.0.xlsx in the Tab HRA Emissions*.

## **Meteorological Data**

The meteorological data utilized in the Health Risk Assessment was obtained from the Santa Barbara County Air Pollution Control District's website. The Lompoc H Street meteorological data was used as it was closest to the Project site and a better representation to the meteorological conditions in the Project area. The Lompoc H Street meteorological data includes the years from 2012-2016.

## **Air Dispersion Model**

The most recent version of Environmental Protection Agency's AMS/EPA Regulatory Model - AERMOD (recompiled for the Lakes ISC-AERMOD View interface version AERMOD\_21112) was used to predict the dispersion of emissions from the Project. Regulatory default options were selected using rural dispersion and elevated terrain (9006\_75m.dem, 9029\_75m.dem, 9030\_75m.dem, and 9031\_75m.dem). Building Profile Input Program was not run to calculate building downwash since there were no point source releases for this Project.

## **Receptors**

A total of 23,384 receptors were analyzed for the Health Risk Assessment which included 654 property boundary receptors. Grid receptor spacing was selected according to Santa Barbara County Air Pollution Control District's Modeling Guidance Section 2.8.3 which states "For facilities with very large property boundaries (e.g., oil and gas leases), the grid spacing must be no greater than 100 meters apart." Section 2.8.3 also states "The grid shall extend at least two kilometers from the property boundary for all property sizes." The grid was constructed using a receptor grid with spacing of 25 meters extending out 200 meters for the first tier, 50 meter spacing extending out 300 meters for the second tier and 100 meter spacing extending out 1,500 meters for the third tier.

Property boundary receptor spacing was selected according to Santa Barbara County Air Pollution Control District's Modeling Guidance Section 2.8.4 which states "For larger facilities, like oil and gas leases, a spacing of 50-100 meters is more practical." However, property boundary receptor spacing of 25 meters was selected. All receptors were modeled with a flagpole height of 1.5 meters.

There is a sensitive receptor located within two kilometers of the project site. A 25-meter spacing receptor grid was placed on the entire school property to accurately estimate the concentration of the sensitive receptor.

The public will not have access to roadways on the Project site. Therefore, no onsite receptors were modeled for acute risk. There were not any pathway receptors modeled. All grid and receptor data may be found in the HRA zipped modeling files in the file *SentinelHRA7.ADO*.

## **Multi-pathway and Exposure Parameters**

The Project does not emit any multi-pathway pollutants, therefore, no receptors were modeled as multi-pathway receptors. The inhalation pathways was the only pathway required and evaluated for the Health Risk Assessment. Pathway and exposure parameters included in the Health Risk Assessment are:

Deposition Rate - A deposition rate is used for non-inhalation pathways only and was therefore not used in this assessment.

Inhalation – The inhalation pathway was included in the Health Risk Assessment. Fraction of time at home option for age bins less than 16 years was not selected due to the presence of Los Berros Elementary School. Fraction of time at home for age bins greater than or equal to 16 years was selected.

Soil Ingestion, Dermal, Mother’s Milk, Drinking Water, Fish, Homegrown Produce, Beef, Dairy, Pig, Chicken and Egg pathways were not required for this assessment since there are no multi-pathway pollutants emitted.

**Health Values and HARP Version**

The newest version of the HARP2 – Air Dispersion and Risk Tool dated 22118 was used for the Health Risk Assessment. The pollutant health information database used in the Health Risk Assessment was dated 22013.

**Risk Scenarios**

Cancer Risk

The cancer risk for the maximally exposed individual resident, the point of maximum impact and the maximally exposed individual worker were evaluated for the Health Risk Assessment. HARP2 calculated the maximally exposed individual worker with a 6.2 worker adjustment factor. **Table 5-8** below shows how the risk values were calculated.

**Table 5-8 - Required Cancer Risk Scenarios**

Receptors	HARP Receptor Type	HARP Exposure Duration	HARP Intake Rate Percentile
PMI	Individual Resident	30 Year	RMP using the Derived Method
Residential Receptors	Individual Resident	30 Year	RMP using the Derived Method
Worker Receptors	Worker	25 Year (Worker)	OEHHA Derived Method
Sensitive	Individual Resident	30 Year	RMP using the Derived Method
Definitions: HARP = Hotspots Analysis Reporting Program PMI = Point of Maximum Impact RMP = Risk Management Policy OEHHA = Office of Environmental Health Hazard Assessment			

Non-Cancer Risk

The non-cancer chronic and acute risks for the point of maximum impact, maximally exposed individual resident, and maximally exposed individual worker were evaluated using the Office of Environmental Health Hazard Assessment Derived Method. HARP2 calculated the maximally exposed individual worker with a 6.2 worker adjustment factor. Acute risk calculated for this Project was calculated as simple acute risk.

An 8-hour chronic risk was required to be evaluated for the maximally exposed individual worker, additionally, the point of maximum impact and maximally exposed individual resident were also evaluated. The HARP2 calculated the 8-hour chronic risk with a 6.2 adjustment factor was used.

## Health Risk Results

The results for the Health Risk Assessment are included in **Table 5-9 through 5-12** below.

**Table 5-9 - Summary of Maximum Cancer Health Risk Impacts**

Receptor	Cancer Risk (in a million)	Significance Threshold	Receptor Number	UTME (meters)	UTMN (meters)
Offsite PMI	0.23	N/A	9360	734800.24	3845279.13
MEIR	0.01	≥ 1	17433	733575.24	3844629.13
MEIW	0.10	≥ 1	9251	734800.24	3845229.13
Definitions:					
PMI =	Point of Maximum Impact		UTME =	Universal Transverse Mercator Easting Coordinate (World Geodetic System 1984 Zone 10 North)	
MEIR =	Maximally Exposed Individual Resident		UTMN =	Universal Transverse Mercator Northing Coordinate (World Geodetic System 1984 Zone 10 North)	
MEIW =	Maximally Exposed Individual Worker				

The cancer health risk impacts in **Table 5-9** above shows that the significance threshold for maximally exposed individual resident and maximally exposed individual worker will not be exceeded. There is no significance threshold for cancer risk at the point of maximum impact.

**Table 5- 10 - Summary of Maximum Chronic Non-Cancer Health Risk Impacts**

Receptor	Chronic HI	Significance Threshold	Receptor Number	UTME (meters)	UTMN (meters)
Offsite PMI	5.22E-04	N/A	23280	734635.98	3845597.07
MEIR	3.35E-05	> 0.1	17433	733575.24	3844629.13
MEIW	4.31E-04	> 0.1	9920	734625.24	3845579.13
Definitions:					
PMI =	Point of Maximum Impact		UTME =	Universal Transverse Mercator Easting Coordinate (World Geodetic System 1984 Zone 10 North)	
MEIR =	Maximally Exposed Individual Resident		UTMN =	Universal Transverse Mercator Northing Coordinate (World Geodetic System 1984 Zone 10 North)	
MEIW =	Maximally Exposed Individual Worker				
HI =	Hazard Index				

The chronic non-cancer health risk impacts in **Table 5-10** above shows that the significance threshold for maximally exposed individual resident and maximally exposed individual worker will not be exceeded. There is no significance threshold for chronic non-cancer risk at the point of maximum impact.

**Table 5- 11 - Summary of Maximum Acute Non-Cancer Health Risk Impacts**

Receptor	Acute HI	Significance Threshold	Receptor Number	UTME (meters)	UTMN (meters)
Offsite PMI	4.29E-02	> 0.1	23280	734635.98	3845597.07
MEIR	4.31E-03	> 0.1	17433	733575.24	3844629.13
MEIW	3.73E-02	> 0.1	10095	734575.24	3845654.13
Definitions:					
PMI =	Point of Maximum Impact		UTME =	Universal Transverse Mercator Easting Coordinate (World Geodetic System 1984 Zone 10 North)	
MEIR =	Maximally Exposed Individual Resident		UTMN =	Universal Transverse Mercator Northing Coordinate (World Geodetic System 1984 Zone 10 North)	
MEIW =	Maximally Exposed Individual Worker				
HI =	Hazard Index				

The acute non-cancer health risk impacts in **Table 5-11** above shows that the significance threshold for point of maximum impact, maximally exposed individual resident, and maximally exposed individual worker will not be exceeded.

**Table 5-12 - Summary of Maximum 8-Hour Chronic Non-Cancer Health Risk Impacts**

Receptor	8-Hour Chronic HI	Significance Threshold	Receptor Number	UTME (meters)	UTMN (meters)
Offsite PMI	3.24E-03	N/A	23280	734635.98	3845597.07
MEIR	2.08E-04	>0.1	17433	733575.24	3844629.13
MEIW	2.67E-03	> 0.1	9920	734625.24	3845579.13
Definitions:					
PMI =	Point of Maximum Impact		UTME =	Universal Transverse Mercator Easting Coordinate (World Geodetic System 1984 Zone 10 North)	
MEIR =	Maximally Exposed Individual Resident		UTMN =	Universal Transverse Mercator Northing Coordinate (World Geodetic System 1984 Zone 10 North)	
MEIW =	Maximally Exposed Individual Worker				
HI =	Hazard Index				

The 8-hour chronic non-cancer health risk impacts in **Table 5-12** above shows that the significance threshold for maximally exposed individual worker will not be exceeded. There is no significance threshold for 8-hour chronic non-cancer risk at the point of maximum impact.

### Risk Drivers

The highest risk driver for the point of maximum impact, maximally exposed individual resident, and maximally exposed individual worker for cancer, chronic, 8-hour chronic and acute risk are listed in **Table 5-13**. Risk drivers were determined by which pollutant contributed to the greatest risk for the total cancer risk or the highest risk index for chronic, 8-hour chronic and acute risk.

**Table 5-13 - Risk Drivers**

<b>Receptor</b>	<b>Cancer Risk</b>	<b>Chronic Risk</b>	<b>8-Hour Chronic Risk</b>	<b>Acute Risk</b>
Offsite PMI	DPM	Benzene	Benzene	Benzene
MEIR	Benzene	Benzene	-	Benzene
MEIW	DPM	Benzene	Benzene	Benzene
Definitions:				
PMI =	Point of Maximum Impact			
MEIR =	Maximally Exposed Individual Resident			
MEIW =	Maximally Exposed Individual Worker			
DPM =	Diesel Particulate Matter			

**Maps and Aerial Photos**

The following maps and aerial photos are included in **Attachment B**:

- ▶ Health Risk Assessment Attachments
  - B-1 – PMI and MEIR Cancer Risk Isoleth
  - B-2 – MEIW Cancer Risk Isoleth
  - B-3 – PMI and MEIR Chronic Non-Cancer Risk Isoleth
  - B-4 – MEIW Chronic Non-Cancer Risk Isoleth
  - B-5 – PMI and MEIW 8-Hour Chronic Non-Cancer Risk Isoleth
  - B-6 – Acute Non-Cancer Risk Isoleth

**Significance Finding**

*The potential health risk attributable to the Project is determined to be less than significant based on the following conclusions:*

1. Potential carcinogenic risk from the Project is *below* the incremental project significance level of one in a million cancer risk; and
2. The hazard index for the potential chronic and acute non-cancer risks from the Project is *below* the incremental project significance level of 0.1 at each of the modeled receptors.

**5.5 Impacts to Ambient Air Quality**

According to Santa Barbara County Air Pollution Control District Rule 802, an ambient air quality impact analysis is required for any project with the potential to emit any pollutant or its precursors equal to or greater than any thresholds listed in Table 5-14.



**Table 5-14 – Ambient Air Quality Impact Analysis Thresholds**

<b>Pollutants</b>	<b>Pounds/day</b>	<b>Tons/year</b>
Particulate Matter	120	-
PM10	80	-
PM2.5	55	-
Carbon Monoxide	500	-
Nitrogen Oxides (as Nitrogen Dioxide)	120	-
Sulfur Oxides (as Sulfur Dioxide)	120	-
Reactive Organic Compounds (ROCs)	120	-
Lead	3.28	-
Asbestos	0.04	-
Beryllium	0.0022	-
Mercury	0.55	-
Vinyl Chloride	5.48	-
Fluorides	16.4	-
Sulfuric Acid Mist	38.4	-
Total Reduced Sulfur (including H2S)	54.8	-
Reduced sulfur compounds	54.8	-
Municipal waste combustor organics	-	0.0000035
Municipal waste combustor metals	-	15
Municipal waste combustor acid gases	-	40
All other attainment or nonattainment pollutants or precursors	120	-

Additionally, any project that has the potential to emit more than 20 pounds per hour of any attainment pollutant or total suspended particulates shall demonstrate to the satisfaction of the Control Officer through use of air quality models meeting the requirements of Rule 805, Section D.1 and Rule 805, Section F, that Project emissions will not cause an ambient air quality standard or increment to be exceeded.

As demonstrated in Tables 5-3, 5-5 and 5-7 above, none of the pollutant thresholds listed in Table 5-14 would be exceeded by the Project nor would the Project have the potential to emit greater than 20 pounds per hour of any attainment pollutant or total suspended particulates. Therefore, an ambient air quality analysis is not required for this project and is considered less than significant for ambient air quality impacts.

## 6. CUMULATIVE IMPACTS

Santa Barbara County Air Pollution Control District under California Environmental Quality Act defines cumulative impacts as two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. Based on the analysis conducted for this Project, the Project is not individually significant for unmitigated criteria pollutant emissions from long-term operations and unmitigated greenhouse gas impacts. This Air Quality Impact Analysis, however, also considered impacts of the proposed Project along with the impacts of other projects previously proposed in the area. Cumulative ozone Impacts (reactive organic gases and nitrogen oxides) were considered from numerous sources within the region including transport from outside the region. Ozone is formed through chemical reactions of reactive organic gases and nitrogen oxides in the presence of sunlight.

Owing to the inherently cumulative nature of air quality impacts, the threshold for whether a project would make a cumulatively considerable contribution to a significant cumulative impact is simply whether the project would exceed project-level thresholds. Based on the analysis conducted for this Project, it is individually *less than significant*. This AQIA, however, also considered impacts of the proposed Project in conjunction with the impacts of other projects previously proposed in the area.

### CUMULATIVE REGIONAL AIR QUALITY IMPACTS

The most recent, certified South Central Coast Air Basin Emission Inventory data available from the California Air Resources Board is based on data gathered for the 2017 annual inventory. This data will be used to assist the Santa Barbara County Air Pollution Control District in demonstrating attainment of Federal 1-hour ozone Standards. **Table 6-1** provides a comparative look at the impacts proposed by the subject Project to the South Central Coast Air Basin Emissions Inventory and the Santa Barbara County portion of the South Central Coast Air Basin.

**Table 6-1 - Project Emissions Relative to 2017 Emission Inventory for South Central Coast Air Basin**

Emission Sources	Carbon Monoxide Tons/Year	Reactive Organic Gases Tons/Year	Nitrogen Oxides Tons/Year	Sulfur Oxides Tons/Year	Particulate Matter (PM <sub>10</sub> ) Tons/Year	Particulate Matter (PM <sub>2.5</sub> ) Tons/Year
Santa Barbara County (South Central Coast Air Basin Portion)	161,826	50,516	26,792	1,686	18,494	2,460
South Central Coast Air Basin	518,367	122,318	25,611	4,784	60,648	42,913
Proposed Project	0.05	0.72	0.70	0.01	2.50	0.48
Proposed Project's percent of Santa Barbara County	0.00003%	0.0014%	0.0026%	0.0006%	0.0135%	0.0195%
Proposed Project's percent of South Central Coast Air Basin	0.00001%	0.0005%	0.0027%	0.0002%	0.0041%	0.0011%

Source: California Air Resources Board 2023

As shown in **Table 6-1** the proposed Project does not pose a significant increase to basin emissions, as such basin emissions would be essentially the same if the Project is approved.

**Tables 6-2** through **6-4** provide California Air Resources Board Emissions Inventory projections for the year 2023 for the South Central Coast Air Basin and Santa Barbara County. The proposed Project produces a small portion of the total emissions within South Central Coast Air Basin boundaries.

**Table 6-2 - Emission Inventory South Central Coast Air Basin 2023 Projection – Tons per Year**

	<b>Reactive Organic Gases</b>	<b>Nitrogen Oxides</b>	<b>Particulate Matter (PM<sub>10</sub>)</b>
Total Emissions	96,178	13,477	24,263
Total Stationary Source Emissions	7,673	2,572	610
Total Area-Wide Source Emissions	10,719	1,079	14,420
Total Mobile Source Emissions	7,683	7,906	1,186
Total Natural Source Emissions	70,307	1,920	8,047
Definitions:			
PM <sub>10</sub> = particulate matter up to 10 microns in diameter			
Note: Total may not add due to rounding.			

Source: California Air Resources Board 2023 (<https://ww2.arb.ca.gov/applications/cepam2019v103-standard-emission-tool>)

**Table 6-3 - Emission Inventory South Central Coast Air Basin - Santa Barbara County Portion 2023 Projection – Tons per Year**

	<b>Reactive Organic Gases</b>	<b>Nitrogen Oxides</b>	<b>Particulate Matter (PM<sub>10</sub>)</b>
Total Emissions	41,376	4,986	11,721
Total Stationary Source Emissions	2,808	944	134
Total Area-Wide Source Emissions	3,601	272	4,960
Total Mobile Source Emissions	2,532	2,569	360
Total Natural Source Emissions	32,433	1,201	6,268
Definitions:			
PM <sub>10</sub> = particulate matter up to 10 microns in diameter			

Source: California Air Resources Board 2023 (<https://ww2.arb.ca.gov/applications/cepam2019v103-standard-emission-tool>)

**Table 6-4 - 2023 Emissions Projections – Proposed Project, South Central Coast Air Basin - Santa Barbara County Portion, and South Central Coast Air Basin – Tons per Year**

	<b>Reactive Organic Gases</b>	<b>Nitrogen Oxides</b>	<b>Particulate Matter (PM<sub>10</sub>)</b>
<b>Proposed Project</b>	<b>0.72</b>	<b>0.70</b>	<b>2.50</b>
Santa Barbara County	41,376	4,986	11,721
South Central Coast Air Basin	96,178	13,477	24,263
Proposed Project Percent of Santa Barbara County	0.0017%	0.014%	0.021%
Proposed Project Percent of South Central Coast Air Basin	0.0007%	0.005%	0.010%
Definitions: PM <sub>10</sub> = particulate matter up to 10 microns in diameter			

Source: California Air Resources Board 2023 (<https://ww2.arb.ca.gov/applications/cepam2019v103-standard-emission-tool>)

As shown above, the proposed Project would pose no substantial impact on regional ozone and particulate matter up to 10 microns in diameter formation. The regional contribution to these cumulative impacts would be negligible. It is reasonable to conclude that the Project is not considered cumulatively significant with regard to particulate matter up to 10 microns in diameter and regional ozone precursors, including reactive organic gases and nitrogen oxides impacts based on evaluation of the regional emission inventory.

### **CUMULATIVE LOCALIZED AIR QUALITY IMPACTS**

No other cumulative projects would be built in the immediate vicinity of the Project; therefore, there would be no operational localized impacts associated with cumulative projects and criteria pollutant emissions. Operational regional impacts from criteria pollutants could be produced; however, as multiple projects would emit into the same air basin at the same time. Additionally, no cumulative significance thresholds are shown since no cumulative thresholds have been established by the Santa Barbara County Air Pollution Control District, California Air Resources Board or other regulatory authority.

The Project's unmitigated operational impacts would be less than significant; therefore, the Project's unmitigated cumulative contribution would not be cumulatively considerable and would be not have a significant cumulative impact and would be considered *less than significant*.

## 7. IMPACTS TO GLOBAL CLIMATE CHANGE

### GLOBAL CLIMATE CHANGE IMPACTS FROM THE PROPOSED PROJECT

There are a number of factors available for estimating the greenhouse gas emissions. Not all greenhouse gases exhibit the same ability to induce climate change; as a result, greenhouse gas contributions are commonly quantified in carbon dioxide equivalencies. Greenhouse gas emissions were calculated using California Emissions Estimator Model, EMFAC2021, and Santa Barbara County Air Pollution Control District approved calculation spreadsheets for loading racks and fugitive leak emissions along with toxic speciation profiles from the California Air Resources Board. These emissions summarized in **Table 7-1** below.

**Table 7-1 - Estimated Annual Greenhouse Gas Emissions (Metric Tons/Year)**

Source	Construction + Operations <sup>1</sup> Carbon Dioxide Equivalent	Operations <sup>2</sup> Carbon Dioxide Equivalent
Construction Activities	169.46	-
Mobile Tankers	490.00	980.01
Operational Fugitives	5.40	10.80
Indirect Electricity	4.26	8.51
<b>Total GHG Emissions</b>	<b>669.12</b>	<b>999.32</b>
Santa Barbara County Threshold	1,000	1,000
Significant?	No	No
Notes:		
1) Construction + Operations includes 6 months of construction and 6 months of operations.		
2) Operations includes a full year of operations.		

Since this Project does not exceed the 1,000 metric tons of carbon dioxide equivalent per year significance threshold, it would not be required to “reduce their greenhouse gas emissions to the applicable threshold, where feasible, through onsite reductions and/or offsite reductions programs approved by the County of Santa Barbara” (Santa Barbara County 2015). Therefore, the project is less than significant for greenhouse gas emissions impacts and no further mitigation is required.

## 8. CONSISTENCY WITH THE SANTA BARBARA COUNTY AIR POLLUTION CONTROL DISTRICT OZONE PLAN

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A consistency review with land use and population forecasts in local and regional plans, including the Santa Barbara County Air Pollution Control District's Ozone Plan, is required under California Environmental Quality Act for all projects. Proposed projects subject to the most recent Ozone Plan consistency determinations include a wide range of activities such as commercial, industrial, residential, and transportation projects. By definition, consistency with the Ozone Plan for projects subject to these guidelines means that direct and indirect emissions associated with the Project are accounted for in the Ozone Plan's emissions growth assumptions and the Project is consistent with policies adopted in the Ozone Plan. The Ozone Plan relies primarily on the land use and population projections provided by the Santa Barbara County Association of Governments and California Air Resources Board on-road emissions forecast as a basis for vehicle emission forecasting. The 2022 Ozone Plan utilized Santa Barbara County Association of Government's growth forecasts, to project population growth and associated air pollutant emissions for all of the Santa Barbara County incorporated and unincorporated areas (Santa Barbara County Air Pollution Control District 2022).

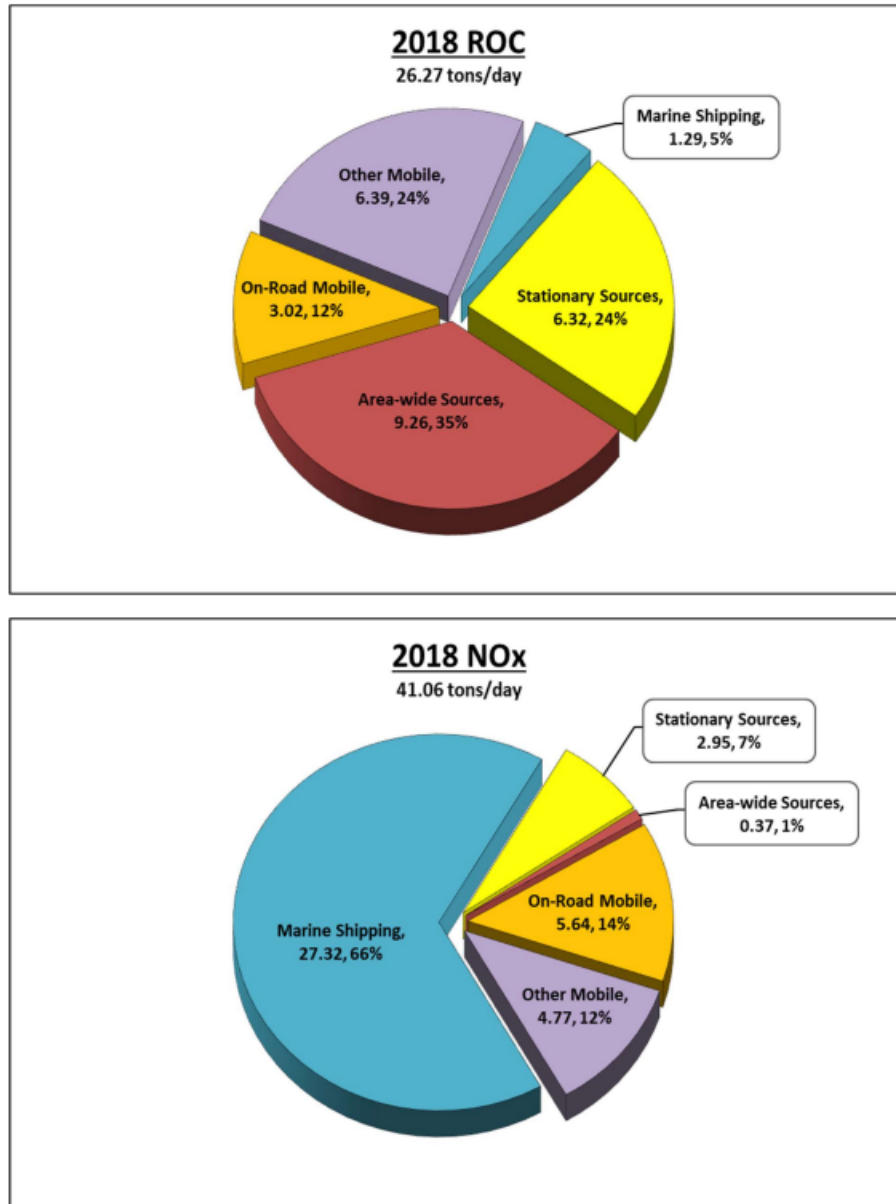
### **Required Evaluation Guidelines**

State California Environmental Quality Act Guidelines and the Federal Clean Air Act (Sections 176 and 316) contain specific references on the need to evaluate consistencies between the proposed Project and the applicable air quality attainment plan for the Project site. To accomplish this, the California Air Resources Board has developed a three-step approach to determine project conformity with the applicable air quality attainment plan:

1. *Determination that an Air Quality Attainment Plan is being implemented in the area where the project is being proposed.* The Santa Barbara County Air Pollution Control District has implemented its version as an air quality attainment plan, the current 2022 Ozone Plan as approved by the California Air Resources Board.
2. *The proposed project must be consistent with the growth assumptions of the applicable 2022 Ozone Plan (Santa Barbara County Air Pollution Control District 2022).* The Project emissions appear to be within the emissions inventory for Oil and Gas operations within the Stationary Sources for Santa Barbara County. See **Table 8-1** below.
3. *The project must contain in its design all reasonably available and feasible air quality control measures.* The proposed Project incorporates all applicable policy and rule-required implementation measures that will reduce related emissions including the standard dust and equipment exhaust mitigation measures as included in Mitigation Measures AQ-1a and Mitigation Measures AQ-1b. Further, the Project would comply with all appropriate Santa Barbara County Air Pollution Control District Rules and Regulations.

**Figure 8-1** presents an overview of the reactive organic compounds and nitrogen oxide emissions by source in the 2022 Ozone Plan (Santa Barbara County Air Pollution Control District 2022).





**Figure 8-1 - 2022 Ozone Plan Summary**

**Table 8-1** excerpts the stationary source emissions and specifically the oil and gas emissions included in the 2022 Ozone Plan and compares them with the estimated Project stationary source emissions. Based on estimated Project stationary source emissions (from **Table 5-5**), converted from pounds per day into tons per day, the Project’s emissions would be found to be 0.07 percent of reactive organic compounds and 0.0 percent of nitrogen oxides of the oil and gas emissions inventory within the 2022 Ozone Plan (Santa Barbara County Air Pollution Control District 2022).

**Table 8-1 - Evaluation of Project Consistency with 2022 Ozone Plan**

<b>Emission Category</b>	<b>Reactive Organic Compounds (tons/day)</b>	<b>Nitrogen Oxides (tons/day)</b>
Ozone Plan Stationary Source emissions	6.32	2.95
Ozone Plan Oil and Gas Emissions	2.85	0.06
Predicted Project stationary source emissions	0.002	0.00
Project Percent of Oil and Gas Emissions in 2022 Ozone Plan	0.07%	0.00%
Are Project emissions within 2019 Ozone Plan estimates?	<b>YES</b>	<b>YES</b>

Source: Santa Barbara County Air Pollution Control District 2019, Insight Environmental Consultants 2022.

Santa Barbara County Air Pollution Control District has established scope and content requirements for air quality sections within Environmental Documents (Santa Barbara County Air Pollution Control District 2022), specifically including a procedure for determining whether a project is inconsistent with the Ozone Plan. All projects must: 1) include the Santa Barbara County Air Pollution Control District required dust mitigation measures; 2) be in compliance with all appropriate Santa Barbara County Air Pollution Control District Rules and Regulations; and 3) be consistent with the emissions inventory in the Ozone Plan.

**CONSISTENCY FINDING:** Because the Project: 1) includes the required dust mitigation measures as part of Mitigation Measure AQ-1a; 2) is in compliance with all Santa Barbara County Air Pollution Control District appropriate Rules and Regulations; and 3) estimates emissions levels that are reasonably within the 2019 Ozone Plan emission inventory for oil and gas stationary sources; the Project therefore can be found to be consistent with the 2022 Ozone Plan.

## 9. MITIGATION MEASURES AND RESIDUAL IMPACTS

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Air Quality mitigation measures and residual impacts are discussed for each impact separately.

### **IMPACT AQ-1 (Short-Term Construction Emissions) MITIGATION MEASURES AND RESIDUAL IMPACTS**

#### **Mitigation Measure AQ-1**

- a) During construction, use water trucks or sprinkler systems to keep all areas of vehicle movement damp enough to prevent dust from leaving the site. The Project should water exposed unpaved traffic areas two to three times per day or as needed, and with increasing frequency when wind speed exceeds 15 miles per hour. Reclaimed water should be used if available and practicable. Soil binders may be used instead of water if practical. The amount of disturbed area will be minimized. Vehicle speeds on unpaved roads will be limited to 15 miles per hour or less. If stockpiling of fill material is required, soil stockpiled for more than two days will be covered, kept moist, or treated with soil binders to mitigate dust generation. Trucks transporting fill material to and from the site will be covered with a tarp from the point of origin. Gravel pads or shakers will be installed at external access points to prevent tracking mud onto public roads. After clearing, grading, earth moving, or excavation is completed, disturbed areas will be watered, re-vegetated, or otherwise controlled to mitigate dust generation.
- b) If applicable, all non-exempt portable diesel-powered construction equipment will be registered with the state's portable equipment registration program OR will obtain a Santa Barbara County Air Pollution Control District permit. Fleet owners of mobile construction equipment are subject to the California Air Resource Board Regulation for In-use Off-road Diesel Vehicles (Title 13 California Code of Regulations, Chapter 9, § 2449), the purpose of which is to reduce diesel particulate matter and criteria pollutant emissions from in-use (existing) off-road diesel-fueled vehicles. For more information, please refer to the California Air Resources Board website at [www.arb.ca.gov/msprog/ordiesel/ordiesel.htm](http://www.arb.ca.gov/msprog/ordiesel/ordiesel.htm). All commercial diesel vehicles are subject to Title 13, § 2485 of the California Code of Regulations, limiting engine idling time. Idling of heavy-duty diesel construction equipment and trucks during loading and unloading will be limited to five minutes; electric auxiliary power units will be used whenever possible.

#### **RESIDUAL IMPACTS OF AQ-1 and AQ-1b**

Emission reductions achieved through the implementation of Mitigation Measures AQ-1 and AQ-1b would further reduce already less than significant fugitive dust and criteria air pollutant emissions during the short-term construction phase. There could potentially be secondary water supply impacts from the use of water for dust control; it has been found that recycled or grey water or soil stabilizers could be used for dust control applications and therefore would have no significant residual impacts on water supply. There would therefore be no residual or secondary impacts from Mitigation Measures AQ-1 and AQ-1b.

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## **ATTACHMENT A: PROJECT EMISSION CALCULATIONS**

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**Table 1: Operating Tankers Exhaust Emissions**

Operating Period	Tanker Round Trips	Miles Traveled	Emissions <sup>1</sup>									
			ROC	CO	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>x</sub>	CO <sub>2</sub>	N <sub>2</sub> O	CH <sub>4</sub>	Units
Daily	10	3,300	0.08	0.45	7.05	0.62	0.29	0.10	10315.30	1.63	0.00	lbs/day
Annual	2000	660,000	0.01	0.05	0.70	0.06	0.03	0.01	936.05	0.15	0.00	tons/yr

- EMFAC2021 Emission Factors listed in Table 4
- Round trip miles: 330
- CO<sub>2</sub>, N<sub>2</sub>O, and CH<sub>4</sub> reported in tonne/yr

**Table 2: Operating Paved Road Travel Emissions - 2023**

Operating Period	Tanker Trips			Tanker Paved miles per trip	sL <sup>1</sup> (g/m <sup>2</sup> )	W <sup>2</sup> (tons)	Emissions		
	Empty	Full	Total				PM <sub>10</sub>	PM <sub>2.5</sub>	Units
Daily	10	10	20	330.00	0.03	22.00	13.98	3.43	lbs/day
Annual	2000	2000	4000				1.40	0.34	tons/yr

- ADT used for estimating silt load factor was based upon averaging the roadway ADTs for all the roads used for the project. The average of all the roadway ADTs was greater than 10,000, which results in an sL factor of 0.03.
- Average Vehicle Weight (W): Average of empty tankers (13 tons) and full tankers (31 tons).
- "k" factors (lb/VMT) were obtained from AP-42 Table 13.2.1-1  
 PM<sub>10</sub>: 0.0022  
 PM<sub>2.5</sub>: 0.00054

**Table 3: Operating Unpaved Road Travel Emissions - 2023**

Operating Period	Tanker Trips			Tanker Paved miles per trip	s <sup>1</sup> (%)	W <sup>2</sup> (tons)	Emissions		
	Empty <sup>4</sup>	Full	Total				PM <sub>10</sub>	PM <sub>2.5</sub>	Units
Daily	0	10	10	0.61	4.30	31.00	10.39	1.04	lbs/day
Annual	0	2000	2000				1.04	0.10	tons/yr

- Silt content from CalEEMod for unpaved road travel (%): 4.3
- Average Vehicle Weight (W) of full tankers in tons: 31
- "k" factors (lb/VMT) and constants 'a' and 'b' were obtained from AP-42 Table 13.2.2-2  
 k-Factor                      a-constant                      b-constant  
 PM<sub>10</sub>: 1.50                      0.9                                      0.45  
 PM<sub>2.5</sub>: 0.15                      0.9                                      0.45
- The trucks will only travel over unpaved roads while full.

**Table 4: EMFAC2021 Information**

Source	Region	Calendar Year	Season	Vehicle Class	Fuel	Model Year	Speed
EMFAC2021	Santa Barbara County	2023	Annual Average	T7 Tractor Class 8	DSL	Aggregate	50

**Table 5: EMFAC2021 Emission Factors**

Running - Emission Factors (g/mile)								
ROC	CO	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>x</sub>	CO <sub>2</sub>	N <sub>2</sub> O	CH <sub>4</sub>
0.0112	0.0623	0.9688	0.0854	0.0396	0.0134	1417.8614	0.2234	0.0005

**Table 6: Loading Rack Pump Electrical Usage GHG Emissions**

Operating Period	kWh	Operating Hours <sup>1</sup>	MW	Emission Rate (lb CO <sub>2</sub> e/MW)	Emissions <sup>1</sup>	
					CO <sub>2</sub> e	Units
Daily	46	10	0.46	206	0.04	tonne/day
Annual	46	2,000	91.14	206	8.51	tonne/yr

- Pump Operates 1 hour per truck load

## CRUDE OIL LOADING RACK EMISSION CALCULATIONS (Ver. 4.2)

Attachment:  
 Permit Number:  
 Facility: Lompoc Oil Field

### Rack Information

<u>Rack Type</u>	<u>Enter X Where Appropriate</u>	<u>S Factor</u>
Submerged Loading of a Clean Cargo Tank	_____	0.50
Submerged Loading: Dedicated Normal Service	_____ X _____	0.60
Submerged Loading: Dedicated Vapor Balance	_____	1.00
Splash Loading of a Clean Cargo Tank	_____	1.45
Splash Loading: Dedicated Normal Service	_____	1.45
Splash Loading: Dedicated Vapor Balance Service	_____	1.00

### Input Data

<u>Input data</u>	<u>Value</u>	<u>Reference</u>
Saturation Factor.....	0.60	Previous Input, AP-42 Table 4.4-1
Molecular Weight.....	50	SBCAPCD Default for Crude Oil
True Vapor Pressure (psia).....	3.600	Per Applicant
Liquid Temperature (°F).....	112	Per Applicant
Loading Rate (bbl/hr).....	320.00	Per Applicant
Storage Capacity (bbl).....	1,600	Max Daily bbl to be trucked
Daily Production (bbl).....	1,600	Max Daily bbl to be trucked
Annual Production (bbl).....	320,000	Annual bbl to be trucked
Vapor Recovery Efficiency.....	0.95	SBCAPCD
ROC/THC Reactivity.....	0.885	SBCAPCD Default for Crude Oil

### Loading Rate Calculations

<u>Calculated Information</u>	<u>Value</u>	<u>Reference</u>
Daily Hours Loading (hours).....	5.00	Calculated Value
Annual Hours Loading (hours).....	1,000.00	Calculated Value
Loading Loss (lb / 1,000 gals).....	2.3526	Calculated Value

### Crude Oil Loading Rack ROC Potential to Emit

<u>Controlled Potential to Emit</u>	
lb/day	<b>7.00</b>
TPY	<b>0.70</b>

Processed By: \_\_\_\_\_

Date: \_\_\_\_\_

**FUGITIVE HYDROCARBON EMISSION CALCULATIONS - CLP METHOD (Ver. 3.0)**

Attachment:  
 Permit Number:  
 Facility: Lompoc Oil Field

**Facility Information**

*Facility Type (Enter X Where Appropriate)*

Production Field  Gas Processing Plant \_\_\_\_\_ Refinery \_\_\_\_\_ Offshore Platform \_\_\_\_\_

**Gas/Condensate Service Component**

Component Type	Component Count	THC Emission Factor (lb/day-clp) <sup>a</sup>	ROC/THC Ratio	Uncontrolled ROC Emission (lb/day)	Control Efficiency <sup>b,c</sup>	Controlled ROC Emission (lb/hr)	Controlled ROC Emission (lb/day)	Controlled ROC Emission (Tons/Qtr)	Controlled ROC Emission (Tons/Yr)
Valves - Accessible/Inaccessible	0	0.295	0.31	0.00	0.80	0.00	0.00	0.00	0.00
Valves - Unsafe	0	0.295	0.31	0.00	0.00	0.00	0.00	0.00	0.00
Valves - Bellows	0	0.295	0.31	0.00	0.90	0.00	0.00	0.00	0.00
Valves - Bellows / Background ppmv	0	0.295	0.31	0.00	1.00	0.00	0.00	0.00	0.00
Valves - Category A	0	0.295	0.31	0.00	0.84	0.00	0.00	0.00	0.00
Valves - Category B	0	0.295	0.31	0.00	0.85	0.00	0.00	0.00	0.00
Valves - Category C	0	0.295	0.31	0.00	0.87	0.00	0.00	0.00	0.00
Valves - Category D	0	0.295	0.31	0.00	0.87	0.00	0.00	0.00	0.00
Valves - Category E	0	0.295	0.31	0.00	0.88	0.00	0.00	0.00	0.00
Valves - Category F	0	0.295	0.31	0.00	0.90	0.00	0.00	0.00	0.00
Valves - Category G	0	0.295	0.31	0.00	0.92	0.00	0.00	0.00	0.00
Flanges/Connections - Accessible/Inaccessible	0	0.070	0.31	0.00	0.80	0.00	0.00	0.00	0.00
Flanges/Connections - Unsafe	0	0.070	0.31	0.00	0.00	0.00	0.00	0.00	0.00
Flanges/Connections - Category A	0	0.070	0.31	0.00	0.84	0.00	0.00	0.00	0.00
Flanges/Connections - Category B	0	0.070	0.31	0.00	0.85	0.00	0.00	0.00	0.00
Flanges/Connections - Category C	0	0.070	0.31	0.00	0.87	0.00	0.00	0.00	0.00
Flanges/Connections - Category D	0	0.070	0.31	0.00	0.87	0.00	0.00	0.00	0.00
Flanges/Connections - Category E	0	0.070	0.31	0.00	0.88	0.00	0.00	0.00	0.00
Flanges/Connections - Category F	0	0.070	0.31	0.00	0.90	0.00	0.00	0.00	0.00
Flanges/Connections - Category G	0	0.070	0.31	0.00	0.92	0.00	0.00	0.00	0.00
Compressor Seals - To Atm	0	2.143	0.31	0.00	0.80	0.00	0.00	0.00	0.00
Compressor Seals - To VRS	0	2.143	0.31	0.00	1.00	0.00	0.00	0.00	0.00
PSV - To Atm/Flare	0	6.670	0.31	0.00	0.80	0.00	0.00	0.00	0.00
PSV - To VRS	0	6.670	0.31	0.00	1.00	0.00	0.00	0.00	0.00
Pump Seals - Single	0	1.123	0.31	0.00	0.80	0.00	0.00	0.00	0.00
Pump Seals - Dual/Tandem	0	1.123	0.31	0.00	1.00	0.00	0.00	0.00	0.00
<b>Gas Condensate Subtotals</b>	<b>0</b>			<b>0.00</b>		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

Component Type	Component Count	THC Emission Factor (lb/day-clp) <sup>a</sup>	ROC/THC Ratio	Uncontrolled ROC Emission (lb/day)	Control Efficiency <sup>b,c</sup>	Controlled ROC Emission (lb/hr)	Controlled ROC Emission (lb/day)	Controlled ROC Emission (Tons/Qtr)	Controlled ROC Emission (Tons/Yr)
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**Oil Service Components**

Component Type	Component Count	THC Emission Factor (lb/day-clp) <sup>a</sup>	ROC/THC Ratio	Uncontrolled ROC Emission (lb/day)	Control Efficiency <sup>b,c</sup>	Controlled ROC Emission (lb/hr)	Controlled ROC Emission (lb/day)	Controlled ROC Emission (Tons/Qtr)	Controlled ROC Emission (Tons/Yr)
Valves - Accessible/Inaccessible	0	0.004	0.56	0.00	0.80	0.00	0.00	0.00	0.00
Valves - Unsafe	0	0.004	0.56	0.00	0.00	0.00	0.00	0.00	0.00
Valves - Bellows	0	0.004	0.56	0.00	0.90	0.00	0.00	0.00	0.00
Valves - Bellows / Background ppmv	0	0.004	0.56	0.00	1.00	0.00	0.00	0.00	0.00
Valves - Category A	0	0.004	0.56	0.00	0.84	0.00	0.00	0.00	0.00
Valves - Category B	0	0.004	0.56	0.00	0.85	0.00	0.00	0.00	0.00
Valves - Category C	0	0.004	0.56	0.00	0.87	0.00	0.00	0.00	0.00
Valves - Category D	0	0.004	0.56	0.00	0.87	0.00	0.00	0.00	0.00
Valves - Category E	0	0.004	0.56	0.00	0.88	0.00	0.00	0.00	0.00
Valves - Category F	42	0.004	0.56	0.10	0.90	0.00	0.01	0.00	0.00
Valves - Category G	0	0.004	0.56	0.00	0.92	0.00	0.00	0.00	0.00
Flanges/Connections - Accessible/Inaccessible	0	0.002	0.56	0.00	0.80	0.00	0.00	0.00	0.00
Flanges/Connections - Unsafe	0	0.002	0.56	0.00	0.00	0.00	0.00	0.00	0.00
Flanges/Connections - Category A	0	0.002	0.56	0.00	0.84	0.00	0.00	0.00	0.00
Flanges/Connections - Category B	0	0.002	0.56	0.00	0.85	0.00	0.00	0.00	0.00
Flanges/Connections - Category C	0	0.002	0.56	0.00	0.87	0.00	0.00	0.00	0.00
Flanges/Connections - Category D	0	0.002	0.56	0.00	0.87	0.00	0.00	0.00	0.00
Flanges/Connections - Category E	0	0.002	0.56	0.00	0.88	0.00	0.00	0.00	0.00
Flanges/Connections - Category F	387	0.002	0.56	0.43	0.90	0.00	0.04	0.00	0.01
Flanges/Connections - Category G	0	0.002	0.56	0.00	0.92	0.00	0.00	0.00	0.00
PSV - To Atm/Flare	0	0.267	0.56	0.00	0.80	0.00	0.00	0.00	0.00
PSV - To VRS	2	0.267	0.56	0.30	1.00	0.00	0.00	0.00	0.00
Pump Seals - Single	0	0.004	0.56	0.00	0.80	0.00	0.00	0.00	0.00
Pump Seals - Dual/Tandem	0	0.004	0.56	0.00	1.00	0.00	0.00	0.00	0.00
<b>Oil Subtotals</b>	<b>431</b>			<b>0.83</b>		<b>0.00</b>	<b>0.05</b>	<b>0.00</b>	<b>0.01</b>
<b>Total</b>	<b>431</b>			<b>0.83</b>		<b>0.00</b>	<b>0.05</b>	<b>0.00</b>	<b>0.01</b>

Notes:

- a. District Policy and Procedure 6100.061.1998.
- b. A 80% efficiency is assigned to fugitive components Rule 331 implementation.
- c. Emission control efficiencies for each component type are identified in FHC Control Factors (Ver. 2.0).

Processed By:

Date:

Sentinel Peak Lompoc Construction - Santa Barbara-North of Santa Ynez County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

**Sentinel Peak Lompoc Construction  
Santa Barbara-North of Santa Ynez County, Annual**

**1.0 Project Characteristics**

**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	0.71	User Defined Unit	0.71	0.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	3.1	<b>Precipitation Freq (Days)</b>	37
<b>Climate Zone</b>	4			<b>Operational Year</b>	2022
<b>Utility Company</b>	Pacific Gas and Electric Company				
<b>CO2 Intensity (lb/MWhr)</b>	203.98	<b>CH4 Intensity (lb/MWhr)</b>	0.033	<b>N2O Intensity (lb/MWhr)</b>	0.004

**1.3 User Entered Comments & Non-Default Data**

- Project Characteristics -
- Land Use - Estimated acreage of project area
- Construction Phase - Estimates Construction Schedule
- Off-road Equipment - Estimated Equipment and hours
- Off-road Equipment - Estimated Equipment and hours
- Off-road Equipment - Estimated Equipment and hours
- Trips and VMT - Estimated workers and vendor trips
- Grading - Acres to be graded
- Landscape Equipment - Construction Only
- Construction Off-road Equipment Mitigation -



Sentinel Peak Lompoc Construction - Santa Barbara-North of Santa Ynez County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	100.00	131.00
tblConstructionPhase	NumDays	2.00	10.00
tblConstructionPhase	NumDays	5.00	1.00
tblGrading	AcresOfGrading	15.00	0.71
tblGrading	MaterialExported	0.00	150.00
tblGrading	MaterialImported	0.00	700.00
tblLandscapeEquipment	NumberSummerDays	180	0
tblLandUse	LotAcreage	0.00	0.71
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	UsageHours	4.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	HaulingTripNumber	106.00	5.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00

**2.0 Emissions Summary**

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Sentinel Peak Lompoc Construction - Santa Barbara-North of Santa Ynez County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

**2.2 Overall Operational**

**Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

**3.0 Construction Detail**

**Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	3/1/2023	3/14/2023	5	10	
2	Building Construction	Building Construction	3/1/2023	8/30/2023	5	131	
3	Paving	Paving	3/1/2023	3/1/2023	5	1	

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**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0.71**

**Acres of Paving: 0**

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

**OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Graders	1	8.00	187	0.41
Grading	Off-Highway Trucks	1	8.00	402	0.38
Grading	Scrapers	1	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Off-Highway Trucks	1	8.00	402	0.38
Building Construction	Off-Highway Trucks	1	4.00	402	0.38
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37

**Trips and VMT**

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	4	10.00	1.00	5.00	8.30	6.40	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	3	10.00	0.00	0.00	8.30	6.40	20.00	LD_Mix	HDT_Mix	HHDT
Paving	4	10.00	0.00	0.00	8.30	6.40	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**

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Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

**3.2 Grading - 2023**

**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					4.5000e-004	0.0000	4.5000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.1300e-003	0.0902	0.0668	1.9000e-004		3.4000e-003	3.4000e-003		3.1300e-003	3.1300e-003	0.0000	16.7487	16.7487	5.4200e-003	0.0000	16.8841
<b>Total</b>	<b>9.1300e-003</b>	<b>0.0902</b>	<b>0.0668</b>	<b>1.9000e-004</b>	<b>4.5000e-004</b>	<b>3.4000e-003</b>	<b>3.8500e-003</b>	<b>5.0000e-005</b>	<b>3.1300e-003</b>	<b>3.1800e-003</b>	<b>0.0000</b>	<b>16.7487</b>	<b>16.7487</b>	<b>5.4200e-003</b>	<b>0.0000</b>	<b>16.8841</b>

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**3.2 Grading - 2023**

**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	1.0000e-005	4.1000e-004	1.1000e-004	0.0000	4.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1555	0.1555	1.0000e-005	2.0000e-005	0.1632
Vendor	1.0000e-005	2.4000e-004	8.0000e-005	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0907	0.0907	0.0000	1.0000e-005	0.0948
Worker	1.3000e-004	9.0000e-005	9.8000e-004	0.0000	3.1000e-004	0.0000	3.1000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2381	0.2381	1.0000e-005	1.0000e-005	0.2407
<b>Total</b>	<b>1.5000e-004</b>	<b>7.4000e-004</b>	<b>1.1700e-003</b>	<b>0.0000</b>	<b>3.8000e-004</b>	<b>0.0000</b>	<b>3.9000e-004</b>	<b>1.0000e-004</b>	<b>0.0000</b>	<b>1.0000e-004</b>	<b>0.0000</b>	<b>0.4843</b>	<b>0.4843</b>	<b>2.0000e-005</b>	<b>4.0000e-005</b>	<b>0.4987</b>

**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					1.8000e-004	0.0000	1.8000e-004	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.1300e-003	0.0902	0.0668	1.9000e-004		3.4000e-003	3.4000e-003		3.1300e-003	3.1300e-003	0.0000	16.7487	16.7487	5.4200e-003	0.0000	16.8841
<b>Total</b>	<b>9.1300e-003</b>	<b>0.0902</b>	<b>0.0668</b>	<b>1.9000e-004</b>	<b>1.8000e-004</b>	<b>3.4000e-003</b>	<b>3.5800e-003</b>	<b>2.0000e-005</b>	<b>3.1300e-003</b>	<b>3.1500e-003</b>	<b>0.0000</b>	<b>16.7487</b>	<b>16.7487</b>	<b>5.4200e-003</b>	<b>0.0000</b>	<b>16.8841</b>



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**3.2 Grading - 2023**

**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	1.0000e-005	4.1000e-004	1.1000e-004	0.0000	4.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1555	0.1555	1.0000e-005	2.0000e-005	0.1632
Vendor	1.0000e-005	2.4000e-004	8.0000e-005	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0907	0.0907	0.0000	1.0000e-005	0.0948
Worker	1.3000e-004	9.0000e-005	9.8000e-004	0.0000	3.1000e-004	0.0000	3.1000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2381	0.2381	1.0000e-005	1.0000e-005	0.2407
<b>Total</b>	<b>1.5000e-004</b>	<b>7.4000e-004</b>	<b>1.1700e-003</b>	<b>0.0000</b>	<b>3.8000e-004</b>	<b>0.0000</b>	<b>3.9000e-004</b>	<b>1.0000e-004</b>	<b>0.0000</b>	<b>1.0000e-004</b>	<b>0.0000</b>	<b>0.4843</b>	<b>0.4843</b>	<b>2.0000e-005</b>	<b>4.0000e-005</b>	<b>0.4987</b>

**3.3 Building Construction - 2023**

**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	0.0725	0.6005	0.4433	1.6800e-003		0.0231	0.0231		0.0213	0.0213	0.0000	147.2830	147.2830	0.0476	0.0000	148.4739
<b>Total</b>	<b>0.0725</b>	<b>0.6005</b>	<b>0.4433</b>	<b>1.6800e-003</b>		<b>0.0231</b>	<b>0.0231</b>		<b>0.0213</b>	<b>0.0213</b>	<b>0.0000</b>	<b>147.2830</b>	<b>147.2830</b>	<b>0.0476</b>	<b>0.0000</b>	<b>148.4739</b>

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**3.3 Building Construction - 2023**

**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	1.6900e-003	1.2100e-003	0.0128	3.0000e-005	4.0500e-003	2.0000e-005	4.0700e-003	1.0800e-003	2.0000e-005	1.0900e-003	0.0000	3.1188	3.1188	1.2000e-004	1.1000e-004	3.1536
<b>Total</b>	<b>1.6900e-003</b>	<b>1.2100e-003</b>	<b>0.0128</b>	<b>3.0000e-005</b>	<b>4.0500e-003</b>	<b>2.0000e-005</b>	<b>4.0700e-003</b>	<b>1.0800e-003</b>	<b>2.0000e-005</b>	<b>1.0900e-003</b>	<b>0.0000</b>	<b>3.1188</b>	<b>3.1188</b>	<b>1.2000e-004</b>	<b>1.1000e-004</b>	<b>3.1536</b>

**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	0.0725	0.6005	0.4433	1.6800e-003		0.0231	0.0231		0.0213	0.0213	0.0000	147.2828	147.2828	0.0476	0.0000	148.4737
<b>Total</b>	<b>0.0725</b>	<b>0.6005</b>	<b>0.4433</b>	<b>1.6800e-003</b>		<b>0.0231</b>	<b>0.0231</b>		<b>0.0213</b>	<b>0.0213</b>	<b>0.0000</b>	<b>147.2828</b>	<b>147.2828</b>	<b>0.0476</b>	<b>0.0000</b>	<b>148.4737</b>

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**3.3 Building Construction - 2023**

**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	1.6900e-003	1.2100e-003	0.0128	3.0000e-005	4.0500e-003	2.0000e-005	4.0700e-003	1.0800e-003	2.0000e-005	1.0900e-003	0.0000	3.1188	3.1188	1.2000e-004	1.1000e-004	3.1536
<b>Total</b>	<b>1.6900e-003</b>	<b>1.2100e-003</b>	<b>0.0128</b>	<b>3.0000e-005</b>	<b>4.0500e-003</b>	<b>2.0000e-005</b>	<b>4.0700e-003</b>	<b>1.0800e-003</b>	<b>2.0000e-005</b>	<b>1.0900e-003</b>	<b>0.0000</b>	<b>3.1188</b>	<b>3.1188</b>	<b>1.2000e-004</b>	<b>1.1000e-004</b>	<b>3.1536</b>

**3.4 Paving - 2023**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.4000e-004	2.3400e-003	3.1600e-003	0.0000		1.2000e-004	1.2000e-004		1.1000e-004	1.1000e-004	0.0000	0.4184	0.4184	1.3000e-004	0.0000	0.4217
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>2.4000e-004</b>	<b>2.3400e-003</b>	<b>3.1600e-003</b>	<b>0.0000</b>		<b>1.2000e-004</b>	<b>1.2000e-004</b>		<b>1.1000e-004</b>	<b>1.1000e-004</b>	<b>0.0000</b>	<b>0.4184</b>	<b>0.4184</b>	<b>1.3000e-004</b>	<b>0.0000</b>	<b>0.4217</b>

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**3.4 Paving - 2023**

**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	1.0000e-005	1.0000e-005	1.0000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0238	0.0238	0.0000	0.0000	0.0241
<b>Total</b>	<b>1.0000e-005</b>	<b>1.0000e-005</b>	<b>1.0000e-004</b>	<b>0.0000</b>	<b>3.0000e-005</b>	<b>0.0000</b>	<b>3.0000e-005</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>0.0238</b>	<b>0.0238</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0241</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.4000e-004	2.3400e-003	3.1600e-003	0.0000		1.2000e-004	1.2000e-004		1.1000e-004	1.1000e-004	0.0000	0.4184	0.4184	1.3000e-004	0.0000	0.4217
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>2.4000e-004</b>	<b>2.3400e-003</b>	<b>3.1600e-003</b>	<b>0.0000</b>		<b>1.2000e-004</b>	<b>1.2000e-004</b>		<b>1.1000e-004</b>	<b>1.1000e-004</b>	<b>0.0000</b>	<b>0.4184</b>	<b>0.4184</b>	<b>1.3000e-004</b>	<b>0.0000</b>	<b>0.4217</b>

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**3.4 Paving - 2023**

**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	1.0000e-005	1.0000e-005	1.0000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0238	0.0238	0.0000	0.0000	0.0241
<b>Total</b>	<b>1.0000e-005</b>	<b>1.0000e-005</b>	<b>1.0000e-004</b>	<b>0.0000</b>	<b>3.0000e-005</b>	<b>0.0000</b>	<b>3.0000e-005</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>0.0238</b>	<b>0.0238</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0241</b>

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**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

**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**

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	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**

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	6.60	5.50	6.40	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	0.487868	0.051904	0.208483	0.155237	0.030766	0.007315	0.011402	0.006111	0.000989	0.000607	0.031259	0.003553	0.004508







Sentinel Peak Lompoc Construction - Santa Barbara-North of Santa Ynez County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

**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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated**

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

**6.0 Area Detail**

**6.1 Mitigation Measures Area**



Sentinel Peak Lompoc Construction - Santa Barbara-North of Santa Ynez County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

**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	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**7.0 Water Detail**

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**7.1 Mitigation Measures Water**

Sentinel Peak Lompoc Construction - Santa Barbara-North of Santa Ynez County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

	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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

Sentinel Peak Lompoc Construction - Santa Barbara-North of Santa Ynez County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

**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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**8.0 Waste Detail**

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**8.1 Mitigation Measures Waste**

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

Sentinel Peak Lompoc Construction - Santa Barbara-North of Santa Ynez County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

**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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**9.0 Operational Offroad**

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Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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Sentinel Peak Lompoc Construction - Santa Barbara-North of Santa Ynez County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**

**10.0 Stationary Equipment**

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**Fire Pumps and Emergency Generators**

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

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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**User Defined Equipment**

Equipment Type	Number
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**11.0 Vegetation**

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## **ATTACHMENT B: HRA ELECTRONIC FILES AND ISOPLETH**

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**TABLE B-1: Air Toxic Emissions Factors for Tanks, Fugitive Components, and Loading Rack**

Carb Speciation Profiles	Pollutant	CAS No.	TOC Fraction	ROC/TOC	ROC Fraction	Has a REL or CPF?
Oil & Gas Production Fugitives Liquid Service Profile: 756 (Also Used for Loading Racks)	isomers of hexane		0.099	0.56	0.177	Yes (n-Hexane)
	isomers of heptane		0.116	0.56	0.207	No
	isomers of octane		0.087	0.56	0.155	No
	c7 cycloparaffins		0.016	0.56	0.029	No
	c8 cycloparaffins		0.006	0.56	0.011	No
	isomers of pentane		0.056	0.56	0.100	No
	methane	74828	0.376	0.56	0.671	No
	ethane	74840	0.064	0.56	0.114	No
	propane	74986	0.101	0.56	0.180	No
	n-butane	106978	0.074	0.56	0.132	No
	isobutane	75285	0.004	0.56	0.007	No
	benzene	71432	0.001	0.56	0.002	Yes

1. ROC/TOC from SBCAPCD Website <https://www.ourair.org/wp-content/uploads/6100-061-1.pdf>

2. REL and CPF from OEHA Website [http://www.oehha.ca.gov/air/hot\\_spots/index.html](http://www.oehha.ca.gov/air/hot_spots/index.html)

**TABLE B-2: H<sub>2</sub>S Emissions Factors for Tanks, Fugitive Components, and Loading Rack**

Category	Pollutant	CAS No.	TOC Fraction	ROC/TOC	ROC Fraction	Has a REL or CPF?
Liquid Service - Fugitives (Low H2S)	Hydrogen Sulfide	7783064	1.88E-05	0.56	3.35E-05	Yes
Gas Service - Fugitives (Low H2S)	Hydrogen Sulfide	7783064	1.88E-05	0.31	6.06E-05	Yes
Liquid Service - Fugitives (High H2S)	Hydrogen Sulfide	7783064	7.51E-03	0.56	1.34E-02	Yes
Gas Service - Fugitives (High H2S)	Hydrogen Sulfide	7783064	7.51E-03	0.31	2.42E-02	Yes
Tanks and Loading Racks	Hydrogen Sulfide	7783064	1.88E-05	0.885	2.12E-05	Yes

1. Because of a lack of a Gas Analysis, a theoretical worst case TOC and ROC fractions of High H<sub>2</sub>S concentrated liquid and gas services were calculated as follows:

H <sub>2</sub> S Concentration:	10	ppmv	H <sub>2</sub> S Concentration:	4,000	ppmv
Gas properties:			Gas properties:		
MW <sub>H2S</sub> =	34.076	g/mol	MW <sub>H2S</sub> =	34.076	g/mol
T =	237.59	K	T =	237.59	K
P =	1	atm	P =	1	atm
R =	8.206E-05	atm*m <sup>3</sup> /(mol*K)	R =	8.206E-05	atm*m <sup>3</sup> /(mol*K)
Assumed ρ <sub>gas</sub> =	0.931	kg/m <sup>3</sup>	Assumed ρ <sub>gas</sub> =	0.931	kg/m <sup>3</sup>
Wt Fraction = ((PV/RT)*MW)/ρ <sub>gas</sub>			Wt Fraction = ((PV/RT)*MW)/ρ <sub>gas</sub>		
Wt Fraction =	0.0000188		Wt Fraction =	0.0075093	

**TABLE B-3: Air Toxic Emissions for Fugitive Oil Service Components**

Component Fugitive Source	Gas Service Components	ROC Emissions Gas Service <sup>2</sup> (lbs/hr)	ROC Emissions Gas Service <sup>1</sup> (lbs/yr)	Benzene (lbs/yr)	Benzene (lbs/hr)	Hexane (lbs/yr)	Hexane (lbs/hr)	Hydrogen Sulfide (lbs/yr)	Hydrogen Sulfide (lbs/hr)	Methane (lbs/yr)	Methane (lbs/hr)
LACT Components Fugitives (VOL1)	108	0.0006	4.84	8.63E-03	9.86E-07	8.55E-01	9.76E-05	6.48E-02	7.40E-06	3.25E+00	3.71E-04
Loading Rack Components Fugitives (VOL2)	216	0.0011	9.67	1.73E-02	1.97E-06	1.71E+00	1.95E-04	3.24E-04	3.70E-08	6.49E+00	7.41E-04
Sulfatreat Components Fugitives (VOL3)	108	0.0006	4.84	8.63E-03	9.86E-07	8.55E-01	9.76E-05	1.62E-04	1.85E-08	3.25E+00	3.71E-04
Total Fugitive Leaks	431	0.0022	19.34	3.45E-02	3.94E-06	3.42E+00	3.90E-04	6.53E-02	7.46E-06	1.30E+01	1.48E-03

**TABLE B-4: Air Toxic Emissions for Loading Rack**

Pollutant	Fugitive Tank Emissions	
	lbs/hr	lbs/yr
ROC	1.399	1399.13
Benzene	2.50E-03	2.50E+00
Hexane	2.47E-01	2.47E+02
Hydrogen Sulfide	2.97E-05	2.97E-02
Methane	9.39E-01	9.39E+02

**TABLE B-5a: Air Toxic Emissions - DPM (Trucks)**

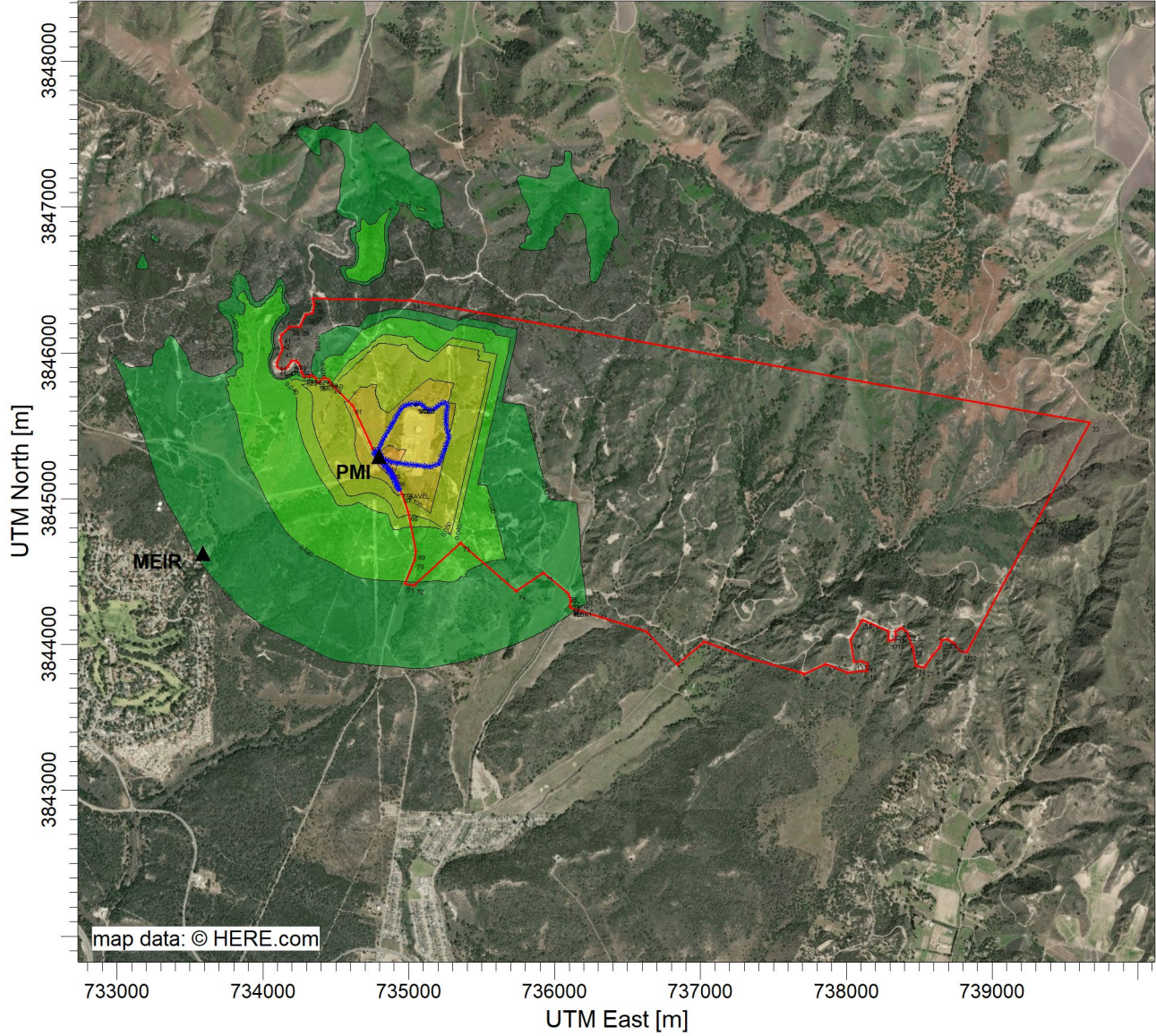
Process	Operating Period	Max Trips	Miles/Trip	Max Miles	PM10 Emission Factor	PM <sub>10</sub> Emissions	
Tanker Trucks (TTRAVEL)	Daily	10	1.40	13.96	0.0093	0.0003	lbs/day
	Annual	2000	1.40	2,792		0.057	lbs/yr

**Table B-5b: EMFAC2021 Information**

Source	Region	Calendar Year	Season	Vehicle Class	Fuel	Model Year	Speed
EMFAC2021	Santa Barbara County	2023	Annual Average	T7 Tractor Class 8	DSL	Aggregate	10 mph

PROJECT TITLE:

**Sentinel Peak Resources Cancer Risk  
PMI and MEIR**



COMMENTS:

MODELING OPTIONS:

COMPANY NAME:

**MODELING, OPTIONS, USED:  
REGFAULT, CONC, ELEV,  
FLGPOL, RURAL, SIGA, DATA**

MODELER:

OUTPUT TYPE:

**Concentration**

RECEPTORS:

**23384**

SCALE:

1:46,452

0 1 km

MAX:

**0.23381**

UNITS:

**Cancer Risk P**

DATE:

**5/24/2023**

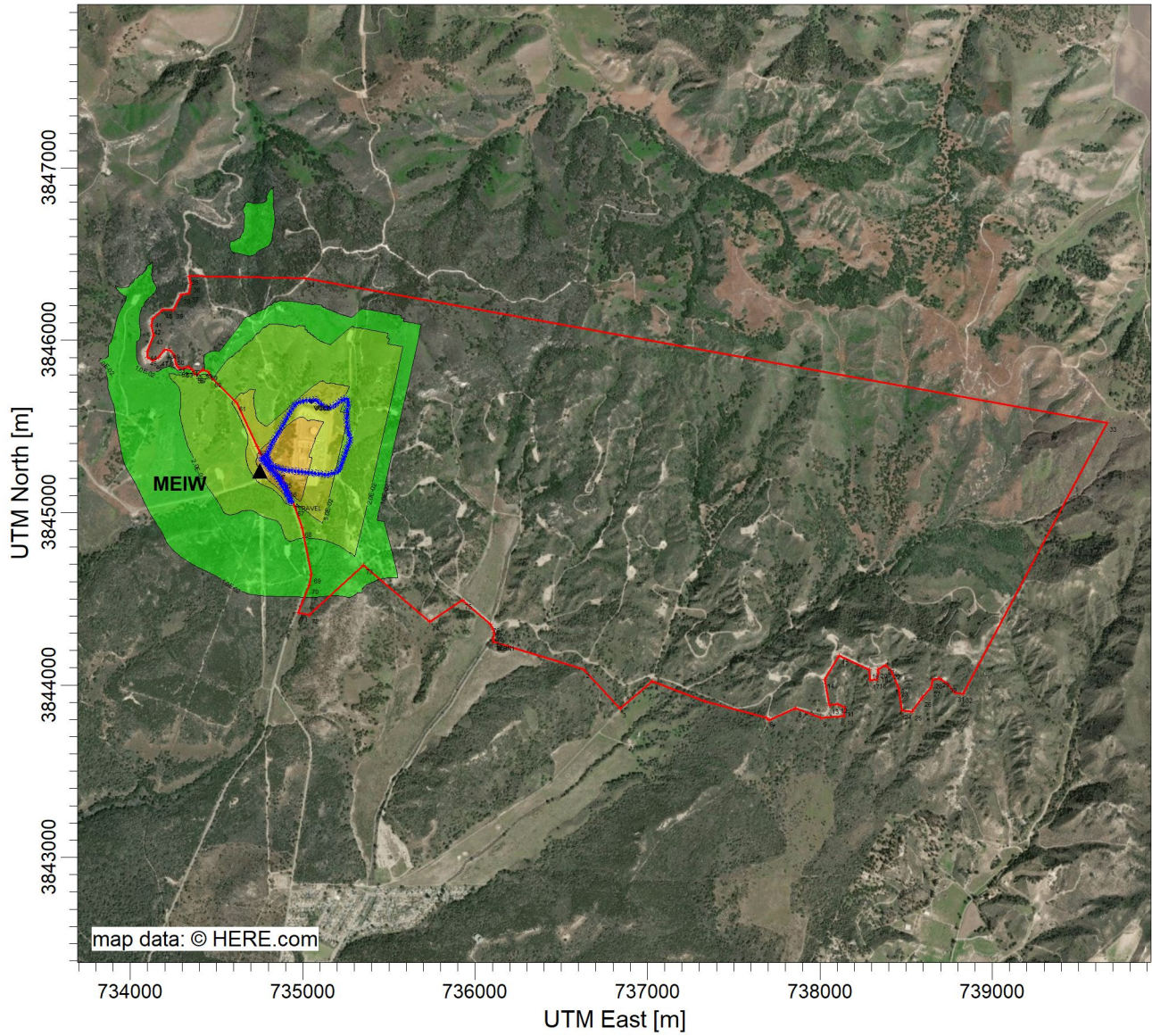
PROJECT NO.:

**HRA Figure B-1**



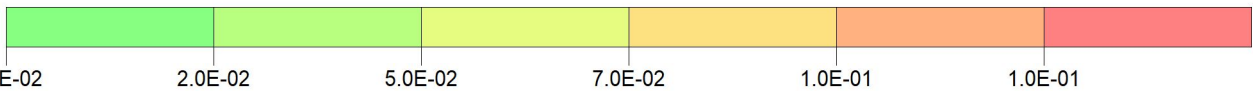
PROJECT TITLE:

**Sentinel Peak Resources Cancer Risk  
MEIW**



PLOT FILE OF PERIOD VALUES FOR SOURCE GROUP: ALL

Cancer Risk Per Million

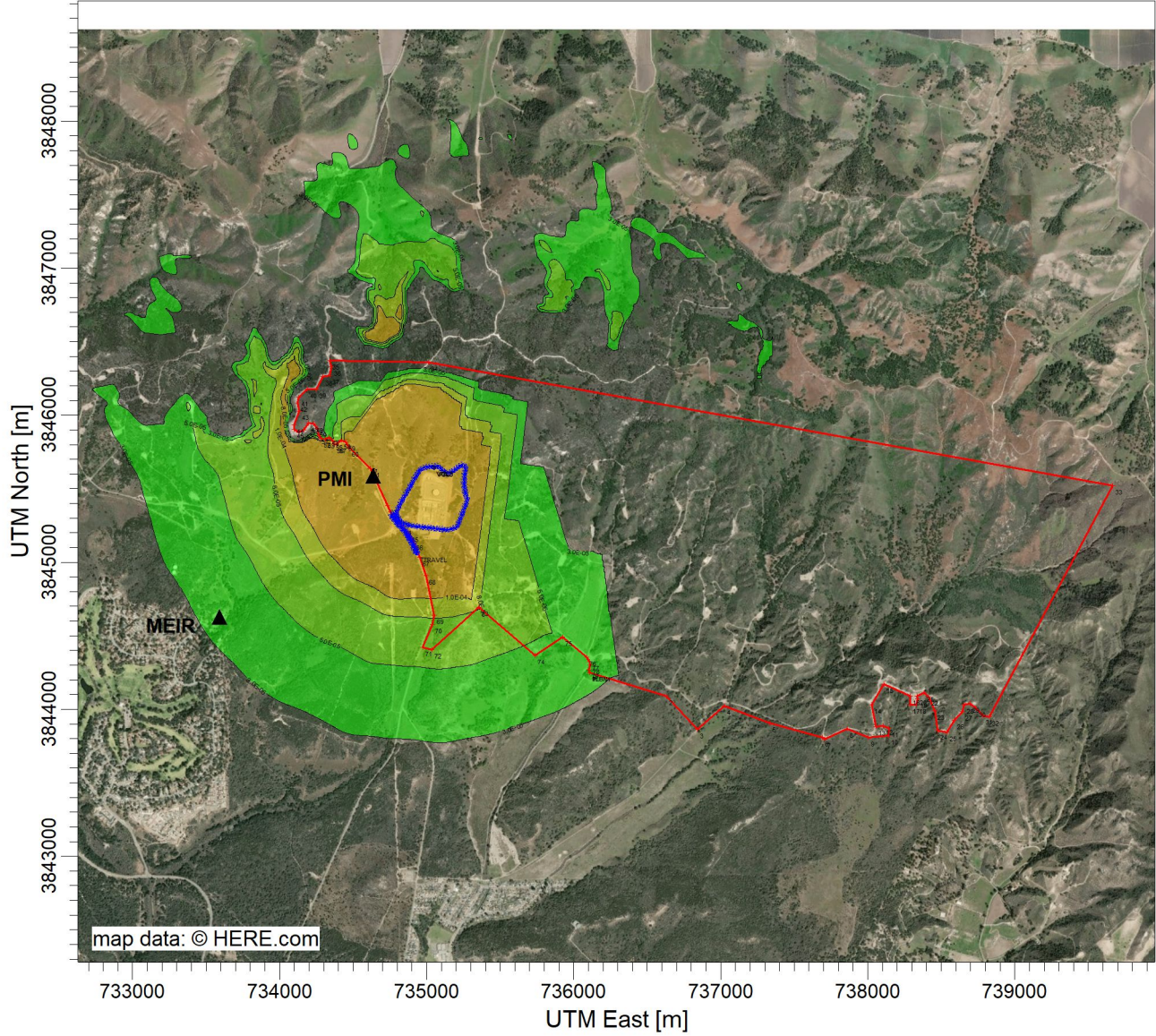


COMMENTS:	MODELING OPTIONS:	COMPANY NAME:	
	<b>MODELING, OPTIONS, USED: REGFAULT, CONC, ELEV, FLGPOL, RURAL, SIGA, DATA</b>	MODELER:	
	OUTPUT TYPE:	RECEPTORS:	SCALE: 1:39,165
	<b>Concentration</b>	<b>23384</b>	0  1 km
MAX:	UNITS:	DATE:	PROJECT NO.:
<b>0.1037</b>	<b>Cancer Risk P</b>	<b>5/24/2023</b>	<b>HRA Figure B-2</b>



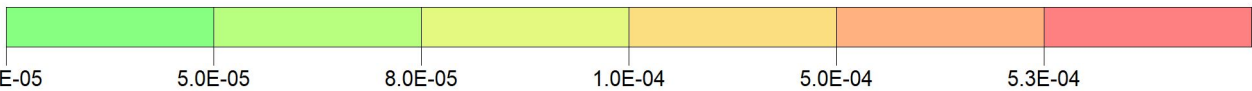
PROJECT TITLE:

**Sentinel Peak Resources Chronic Risk  
PMI and MEIR**



PLOT FILE OF PERIOD VALUES FOR SOURCE GROUP: ALL

CHRONIC HI



COMMENTS:

MODELING OPTIONS:

COMPANY NAME:

**MODELING, OPTIONS, USED:  
REGFAULT, CONC, ELEV,  
FLGPOL, RURAL, SIGA, DATA**

MODELER:

OUTPUT TYPE:

**Concentration**

RECEPTORS:

**23384**

SCALE:

1:46,081



MAX:

**0.00052241**

UNITS:

**CHRONIC HI**

DATE:

**5/24/2023**

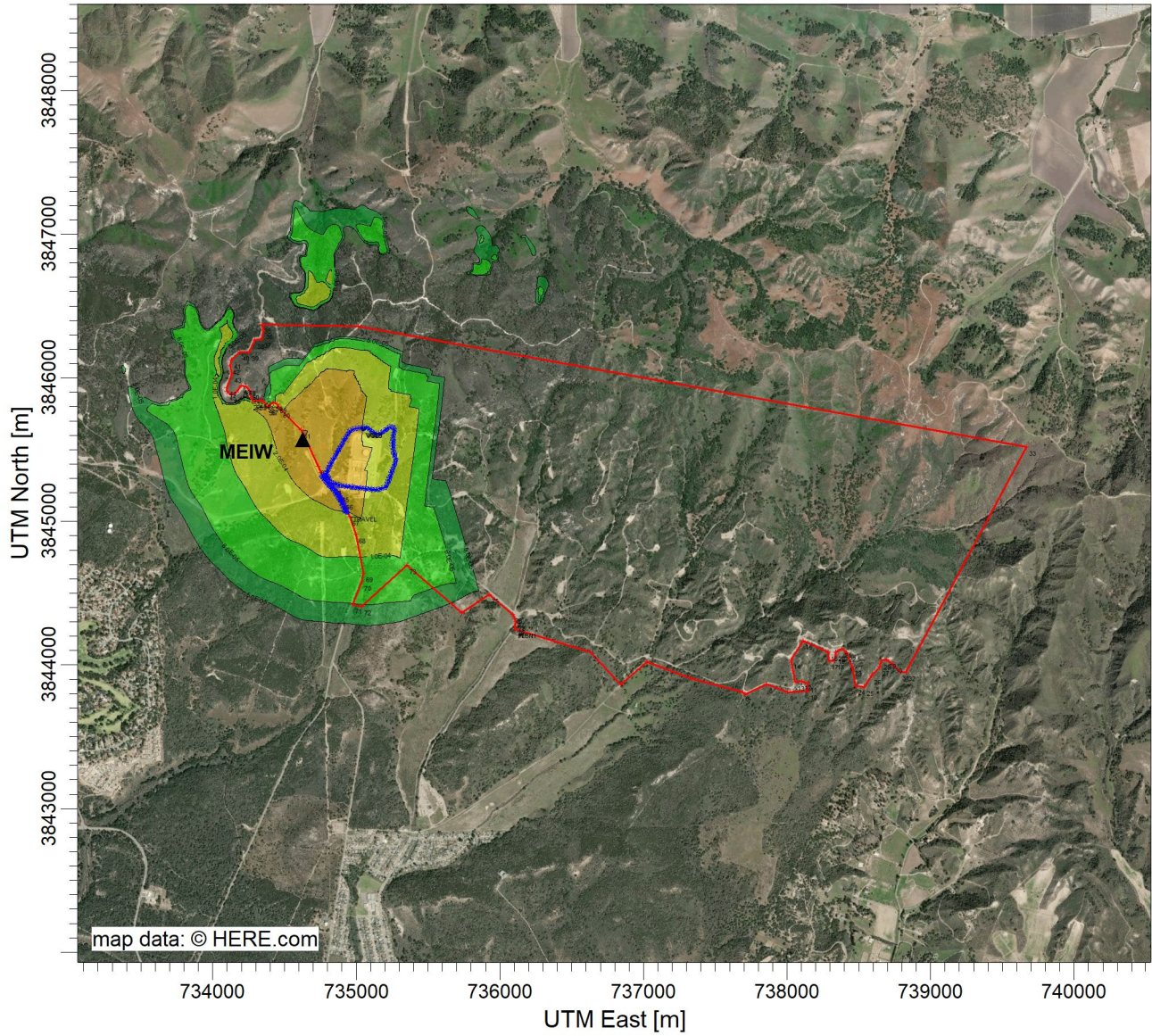
PROJECT NO.:

**HRA Figure B-3**



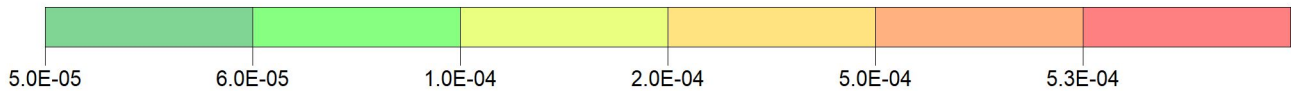
PROJECT TITLE:

**Sentinel Peak Resources Chronic Risk  
MEIW**



PLOT FILE OF PERIOD VALUES FOR SOURCE GROUP: ALL

CHRONIC HI

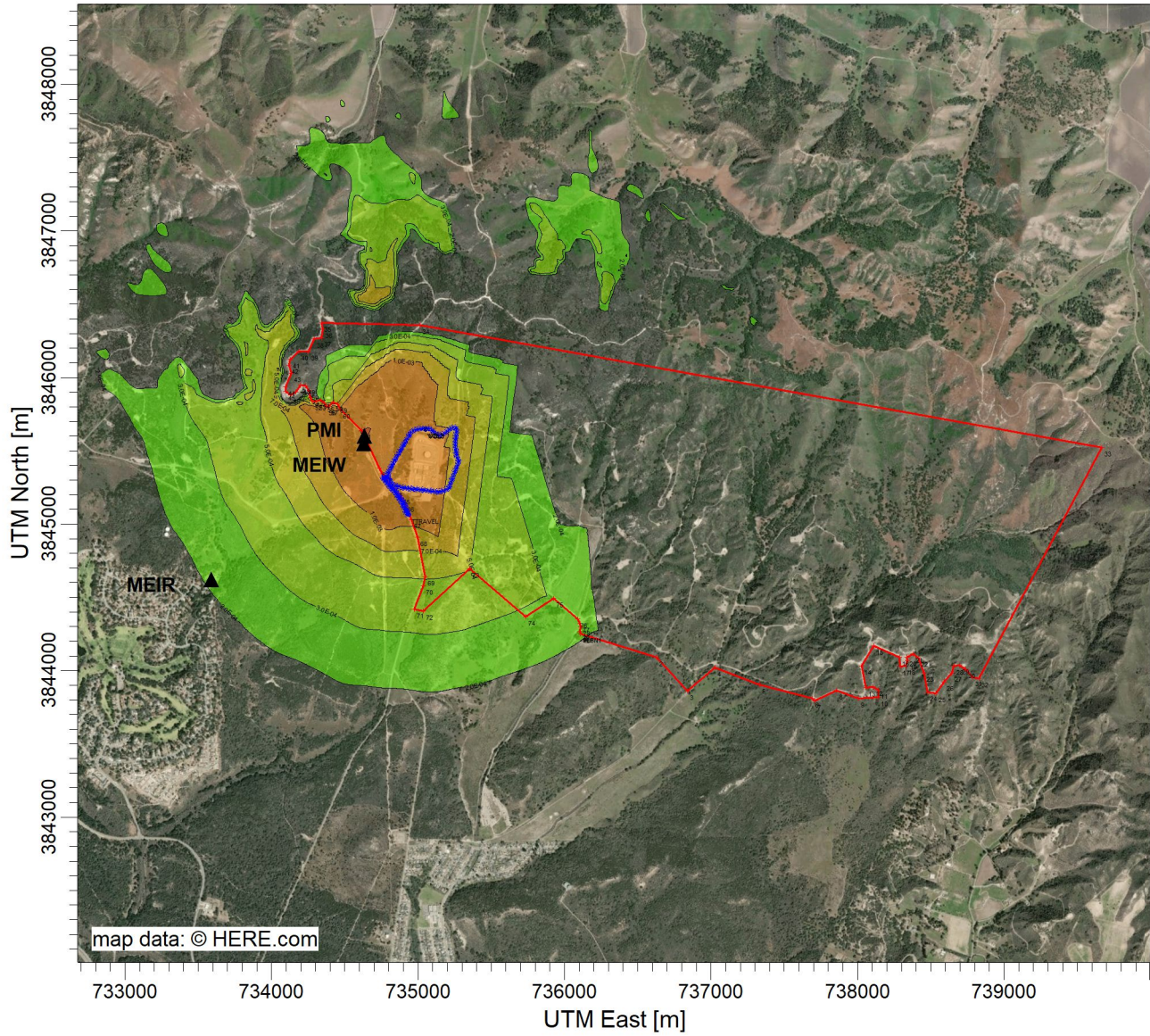


COMMENTS:	MODELING OPTIONS:	COMPANY NAME:	
	<b>MODELING, OPTIONS, USED: REGFAULT, CONC, ELEV, FLGPOL, RURAL, SIGA, DATA</b>	MODELER:	
	OUTPUT TYPE:	RECEPTORS:	SCALE: 1:47,027
	<b>Concentration</b>	<b>23384</b>	0  1 km
MAX:	UNITS:	DATE:	PROJECT NO.:
<b>0.00052241</b>	<b>CHRONIC HI</b>	<b>5/24/2023</b>	<b>HRA Figure B-4</b>



PROJECT TITLE:

**Sentinel Peak Resources 8-HR Chonic Risk  
PMI, MEIR, and MEIW**



PLOT FILE OF PERIOD VALUES FOR SOURCE GROUP: ALL

CHRONIC 8HR HI



COMMENTS:

MODELING OPTIONS:  
**MODELING, OPTIONS, USED:  
REGFAULT, CONC, ELEV,  
FLGPOL, RURAL, SIGA, DATA**

COMPANY NAME:

MODELER:

OUTPUT TYPE:

**Concentration**

RECEPTORS:

**23384**

SCALE:

1:46,076

0 1 km

MAX:

**0.003239**

UNITS:

**CHRONIC 8HR**

DATE:

**5/24/2023**

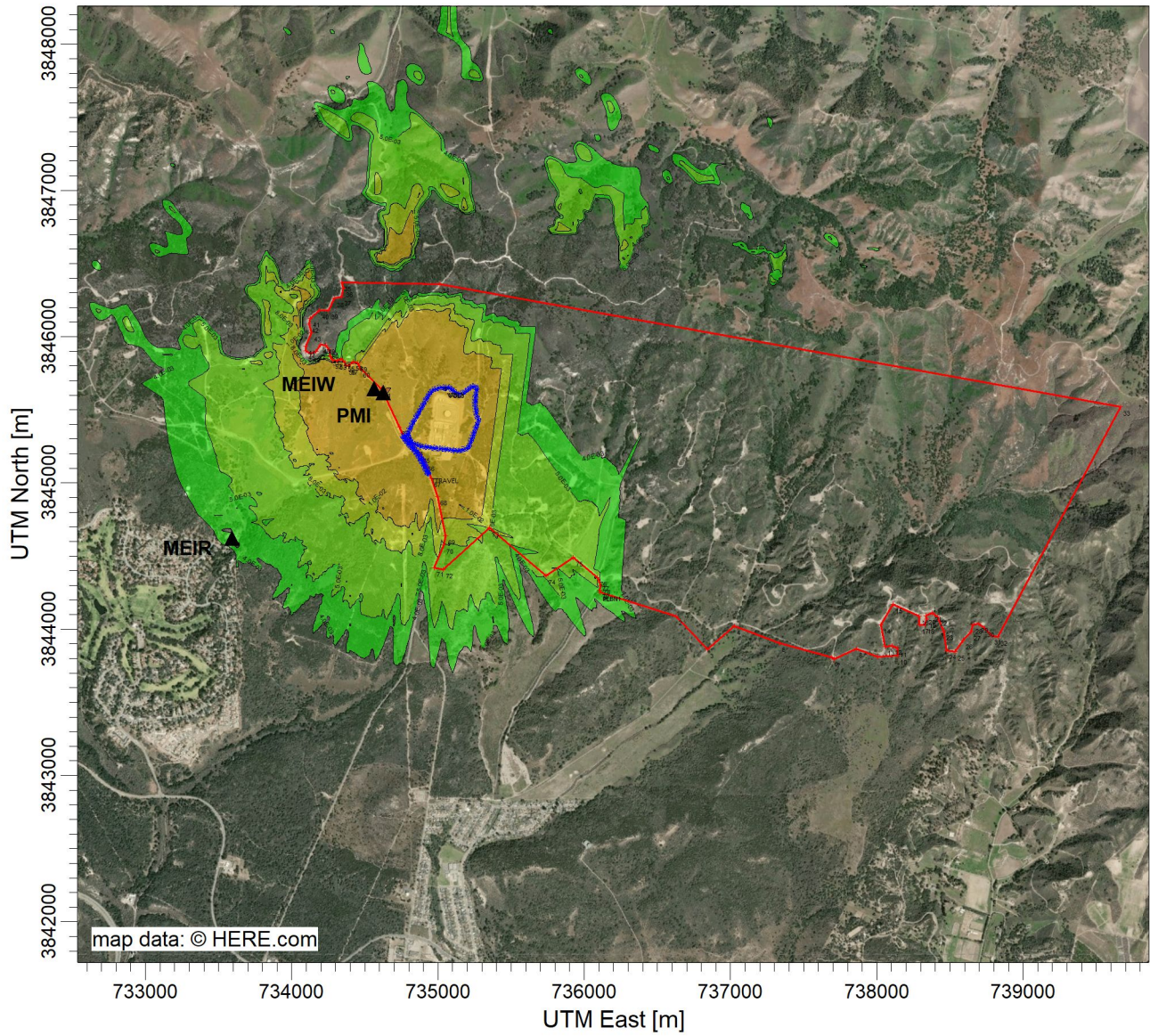
PROJECT NO.:

**HRA Figure B-5**



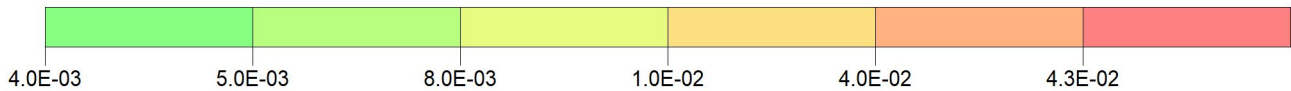
PROJECT TITLE:

**Sentinel Peak Resources Acute Risk  
PMI, MEIR, and MEIW**



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL

ACUTE HI



COMMENTS:	MODELING OPTIONS:	COMPANY NAME:	
	<b>MODELING, OPTIONS, USED: REGFAULT, CONC, ELEV, FLGPOL, RURAL, SIGA, DATA</b>	MODELER:	
	OUTPUT TYPE:	RECEPTORS:	SCALE: 1:46,075
	<b>Concentration</b>	<b>23384</b>	0  1 km
MAX:	UNITS:	DATE:	PROJECT NO.:
<b>0.042929</b>	<b>ACUTE HI</b>	<b>5/24/2023</b>	<b>HRA Figure B-6</b>