830-848 SAN PABLO AVENUE PINOLE SHORES PROJECT AIR QUALITY & GREENHOUSE GAS ASSESSMENT

Pinole, California

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Introduction

The purpose of this report is to address air quality, community health risk, and greenhouse gas impacts associated with the proposed warehouse project located at 830-848 San Pablo Avenue in Pinole, California. The air quality impacts from this project would be associated with construction of the new buildings and operation of the project. Air pollutant emissions associated with construction and operation of the project were predicted using appropriate computer models. In addition, the potential project health risk impacts (including construction and operation) and the cumulative impact of existing toxic air contaminant (TAC) sources affecting the nearby and proposed sensitive receptors were evaluated. The analysis was conducted following guidance provided by the Bay Area Air Quality Management District (BAAQMD).[1]

Project Description

The project site is located on a single vacant parcel that is 7.37 acres located at 830-848 San Pablo Avenue. The project proposes to construct two general industrial buildings totaling approximately 117,943 square feet (sf). The project site would be accessed via one existing driveway on San Pablo Avenue. The project would include surface parking lots throughout the site including 147 standard parking spaces, including 15 spaces for electric vehicles, and 9 truck trailer parking spaces. The exact usage of the proposed buildings is currently unknown, but it is expected to be warehouse and/or research & development. Construction is expected to begin in April 2023 to be completed by December 2023.

Setting

The project is located in Contra Costa County, which is in the San Francisco Bay Area Air Basin. Ambient air quality standards have been established at both the State and federal level. The Bay Area meets all ambient air quality standards with the exception of ground-level ozone, respirable particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$).

Air Pollutants of Concern

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

Particulate matter is another problematic air pollutant of the Bay Area. Particulate matter is assessed and measured in terms of respirable particulate matter or particles that have a diameter of 10 micrometers or less (PM_{10}) and fine particulate matter where particles have a diameter of 2.5 micrometers or less ($PM_{2.5}$). Elevated concentrations of PM_{10} and $PM_{2.5}$ are the result of both region-wide (or cumulative) emissions and localized emissions. High particulate matter levels

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

aggravate respiratory and cardiovascular diseases, reduce lung function, increase mortality (e.g., lung cancer), and result in reduced lung function growth in children.

Toxic Air Contaminants

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

Diesel exhaust is the predominant TAC in urban air and is estimated to represent about three-quarters of the cancer risk from TACs (based on the Bay Area average). According to the California Air Resources Board (CARB), diesel exhaust is a complex mixture of gases, vapors, and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the CARB, and are listed as carcinogens either under the State's Proposition 65 or under the Federal Hazardous Air Pollutants programs. The most recent Office of Environmental Health Hazard Assessment (OEHHA) risk assessment guidelines were published in February of 2015.[2] See *Attachment 1* for a detailed description of the health risk modeling methodology used in this assessment.

Sensitive Receptors

There are groups of people more affected by air pollution than others. CARB has identified the following persons who are most likely to be affected by air pollution: children under 16, the elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive receptors. Locations that may contain a high concentration of these sensitive population groups include residential areas, hospitals, daycare facilities, elder care facilities, and elementary schools. For cancer risk assessments, children are the most sensitive receptors, since they are more susceptible to cancer causing TACs. Residential locations are assumed to include infants and small children. The closest sensitive receptors to the project site are the multi-family residences on the eastern boundary of the project site. Additional sensitive receptors are located at further distances around the project site. This project would not introduce new sensitive receptors (i.e., residents) to the area.

[2] OEHHA, 2015. *Air Toxics Hot Spots Program Risk Assessment Guidelines, The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. Office of Environmental Health Hazard Assessment. February.

Regulatory Setting

Federal Regulations

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

In the past decade, the EPA has established a number of emission standards for on- and non-road heavy-duty diesel engines used in trucks and other equipment. This was done in part because diesel engines are a significant source of NO_X and particulate matter (PM_{10} and $PM_{2.5}$) and because the EPA has identified DPM as a probable carcinogen. Implementation of the heavy-duty diesel on-road vehicle standards and the non-road diesel engine standards are estimated to reduce particulate matter and NO_X emissions from diesel engines up to 95 percent in 2030 when the heavy-duty vehicle fleet is completely replaced with newer heavy-duty vehicles that comply with these emission standards.[3]

In concert with the diesel engine emission standards, the EPA has also substantially reduced the amount of sulfur allowed in diesel fuels. The sulfur contained in diesel fuel is a significant contributor to the formation of particulate matter in diesel-fueled engine exhaust. The new standards reduced the amount of sulfur allowed by 97 percent for highway diesel fuel (from 500 parts per million by weight [ppmw] to 15 ppmw), and by 99 percent for off-highway diesel fuel (from about 3,000 ppmw to 15 ppmw). The low sulfur highway fuel (15 ppmw sulfur), also called ultra-low sulfur diesel (ULSD), is currently required for use by all diesel vehicles in the U.S.

All of the above federal diesel engine and diesel fuel requirements have been adopted by California, in some cases with modifications making the requirements more stringent or the implementation dates sooner.

State Regulations

To address the issue of diesel emissions in the state, CARB developed the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles.[4] In addition to requiring more stringent emission standards for new on-road and off-road mobile sources and stationary diesel-fueled engines to reduce particulate matter emissions by 90 percent, a significant component of the plan involves application of emission control strategies to existing diesel vehicles and equipment. Many of the measures of the Diesel Risk Reduction Plan have been approved and adopted, including the federal on-road and non-road diesel engine emission standards for new engines, as well as adoption of regulations for low sulfur fuel in California.

[3] USEPA, 2000. *Regulatory Announcement, Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements*. EPA420-F-00-057. December.
[4] California Air Resources Board, 2000. Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles. October.

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

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

Bay Area Air Quality Management District (BAAQMD)

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

BAAQMD is the lead agency in developing plans to address attainment and maintenance of the NAAQS and CAAQS. The District also has permit authority over most types of stationary equipment utilized for the proposed project. The BAAQMD is responsible for permitting and inspection of stationary sources; enforcement of regulations, including setting fees, levying fines, and enforcement actions; and ensuring that public nuisances are minimized.

BAAQMD's Community Air Risk Evaluation (CARE) program was initiated in 2004 to evaluate and reduce health risks associated with exposures to outdoor TACs in the Bay Area.[5] The program examines TAC emissions from point sources, area sources, and on-road and off-road mobile sources with an emphasis on diesel exhaust, which is a major contributor to airborne health risk in California. The CARE program is an on-going program that encourages community involvement and input. The technical analysis portion of the CARE program is implemented in three phases that includes an assessment of the sources of TAC emissions, modeling and measurement programs to estimate concentrations of TAC, and an assessment of exposures and health risks.

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[5] See BAAQMD: https://www.baaqmd.gov/community-health/community-health-protection-program/community-air-risk-evaluation-care-program , accessed 2/18/2021.

Throughout the program, information derived from the technical analyses is used to focus emission reduction measures in areas with high TAC exposures and high density of sensitive populations. Risk reduction activities associated with the CARE program are focused on the most at-risk communities in the Bay Area. The BAAQMD has identified six communities as impacted as part of the CARE program: Concord, Richmond/San Pablo, Western Alameda County, San José, Redwood City/East Palo Alto, and Eastern San Francisco.

Additionally, overburdened communities are areas located (i) within a census tract identified by the California Communities Environmental Health Screening Tool (CalEnviroScreen), Version 4.0 implemented by OEHHA, as having an overall score at or above the 70th percentile, or (ii) within 1,000 feet of any such census tract.[6] The project site is not located in the San José CARE area or within an overburdened area as identified by CalEnviroScreen as the Project site is scored at the 42nd percentile.[7]

The BAAQMD California Environmental Quality Act (*CEQA) Air Quality Guidelines*[8] were prepared to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area. The guidelines provide recommended procedures for evaluating potential air impacts during the environmental review process consistent with CEQA requirements including thresholds of significance, mitigation measures, and background air quality information. They also include assessment methodologies for TACs, odors, and GHG emissions.

<u>City of Pinole General Plan Update</u>

The 2010 Pinole General Plan Update[9] outlines the long-range policy framework to guide decision-making related to sustainability and stewardship, community tapestry, and fiscal responsibly and economic health. The Health and Safety Element and Sustainability Element includes goals, policies and actions focused on improving air quality and reducing GHG emissions. The following goals, policies, and actions are applicable to the proposed project:

GOAL SE.6 Integrate green building standards into all new and rehabilitated development.

POLICY SE.6.1 Develop local green building and energy efficiency standards.

GOAL SE.7 Air Quality will be maintained and improved for the City of Pinole and the Bay Area as a region and not decline below levels measured in the early 1990's.

POLICY SE.7.1 Continue working with the Bay Area Air Quality Management District and other regional agencies to:

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[6] See BAAQMD: https://www.baaqmd.gov/~/media/dotgov/files/rules/reg-2-permits/2021-amendments/documents/20210722_01_appendixd_mapsofoverburdenedcommunities-pdf.pdf?la=en , accessed 10/1/2021.

[7] OEHAA, CalEnviroScreen 4.0 Indicator Maps https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40

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

[9] City of Pinole, *Pinole General Plan Update*, November 2010. Web: https://p1cdn4static.civiclive.com/UserFiles/Servers/Server_10946972/File/City%20Government/Planning/General%20Plan/City_of_Pinole_2010_General_Plan%20with%202015-2023%20Housing%20Element%20Update.pdf

1. Improve air quality through pollution prevention methods.
2. Ensure enforcement of air emission standards.
3. Reduce local and regional traffic (the single largest source of air pollution in the city) and support public transit improvements.
4. Promote regional air pollution prevention plans for business and industry.
5. Promote strategies to reduce particulate pollution from residential fireplaces and wood-burning stoves.
6. Locate parking appropriately and provide adequate signage to reduce unnecessary "circling" and searching for parking.
7. Promote anti-idling policies and programs.

ACTION SE.7.1.1 Apply BAAQMD-approved criteria air pollutant reducing Basic Construction Mitigation Measures to all future construction projects within the GPU Planning Area where feasible whether or not construction related emissions exceed applicable Thresholds of Significance. These best management practices include the following:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
4. All vehicle speeds on unpaved roads shall be limited to 15 mph.
5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations (BAAQMD, 2010).

Significance Thresholds

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

BAAQMD updated its thresholds in the CEQA Air Quality Guidelines in 2017 and again in 2022 (GHG thresholds only). The latest BAAQMD significance thresholds, which were used in this analysis and are summarized in Table 1. Impacts above the threshold are considered potentially significant.

Per discussion with BAAQMD staff, in circumstances where a cumulative Health Risk and Hazards threshold is exceeded, a project's contribution would be considered cumulatively considerable if the project's risk exceeds the single source threshold.[10]

[10] Correspondence with Areana Flores, MSc, Environmental Planner, BAAQMD, February 23, 2021

Table 1. BAAQMD CEQA Air Quality Significance Thresholds

Criteria Air Pollutant	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (lbs./day)	Average Daily Emissions (lbs./day)	Annual Average Emissions (tons/year)
ROG	54	54	10
NO_x	54	54	10
PM_{10}	82 (Exhaust)	82	15
$PM_{2.5}$	54 (Exhaust)	54	10
CO	Not Applicable	9.0 ppm (8-hour average) or 20.0 ppm (1-hour average)	
Fugitive Dust	Construction Dust Ordinance or other Best Management Practices	Not Applicable	
Health Risks and Hazards	**Single Sources Within 1,000-foot Zone of Influence**	**Combined Sources (Cumulative from all sources within 1000-foot zone of influence)**	
Excess Cancer Risk	10 per one million	100 per one million	
Hazard Index	1.0	10.0	
Incremental annual $PM_{2.5}$	0.3 $\mu g/m^3$	0.8 $\mu g/m^3$	
Greenhouse Gas Emissions			
Land Use Projects – (Must Include A or B)	A. Projects must include, at a minimum, the following project design elements: 1. Buildings a. The project will not include natural gas appliances or natural gas plumbing (in both residential and nonresidential development). b. The project will not result in any wasteful, inefficient, or unnecessary energy usage as determined by the analysis required under CEQA Section 21100(b)(3) and Section 15126.2(b) of the State CEQA Guidelines. 2. Transportation a. Achieve a reduction in project-generated vehicle miles traveled (VMT) below the regional average consistent with the current version of the California Climate Change Scoping Plan (currently 15 percent) or meet a locally adopted Senate Bill 743 VMT target, reflecting the recommendations provided in the Governor's Office of Planning and Research's Technical Advisory on Evaluating Transportation Impacts in CEQA: i. Residential projects: 15 percent below the existing VMT per capita ii. Office projects: 15 percent below the existing VMT per employee iii. Retail projects: no net increase in existing VMT b. Achieve compliance with off-street electric vehicle requirements in the most recently adopted version of CALGreen Tier 2. B. Be consistent with a local GHG reduction strategy that meets the criteria under State CEQA Guidelines Section 15183.5(b).		
Note: ROG = reactive organic gases, NOx = nitrogen oxides, PM_{10} = course particulate matter or particulates with an aerodynamic diameter of 10 micrometers (µm) or less, $PM_{2.5}$ = fine particulate matter or particulates with an aerodynamic diameter of 2.5µm or less. GHG = greenhouse gases.			

AIR QUALITY IMPACTS AND ENVIRONMENTAL CONDITIONS OF APPROVAL

Impact AIR-1: Conflict with or obstruct implementation of the applicable air quality plan?

BAAQMD is the regional agency responsible for overseeing compliance with State and Federal laws, regulations, and programs within the San Francisco Bay Area Air Basin (SFBAAB). BAAQMD, with assistance from the Association of Bay Area Governments (ABAG) and Metropolitan Transportation Commission (MTC), prepares and implements specific plans to meet the applicable laws, regulations, and programs. The most recent and comprehensive of which is the *Bay Area 2017 Clean Air Plan*.[11] The primary goals of the Clean Air Plan (CAP) are to attain air quality standards, reduce population exposure and protect public health, and reduce GHG emissions and protect the climate. The BAAQMD has also developed CEQA guidelines to assist lead agencies in evaluating the significance of air quality and GHG impacts. In formulating compliance strategies, BAAQMD relies on planned land uses established by local general plans. Land use planning affects vehicle travel, which, in turn, affects region-wide emissions of air pollutants and GHGs.

The 2017 Clean Air Plan, adopted by BAAQMD in April 2017, includes control measures that are intended to reduce air pollutant emissions in the Bay Area either directly or indirectly. Guidance provided in the BAAQMD CEQA guidelines recommends that Plans show consistency with the control measures listed within the Clean Air Plan. At the project-level, there are no consistency measures or thresholds provided in BAAQMD's CEQA guidance. The proposed project would not conflict with the latest Clean Air planning efforts since 1) project would have emissions below the BAAQMD thresholds (see Impact below) and 2) the project would be considered urban infill as it develops an area previously analyzed and approved to be an active commercial or industrial land use. Therefore, the project would have less than significant impacts due to conflicts with the CAP.

Condition of Approval: None.

Impact AIR-2: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

The Bay Area is considered a non-attainment area for ground-level O_3 and $PM_{2.5}$ under both the Federal Clean Air Act and the California Clean Air Act. The area is also considered non-attainment for PM_{10} under the California Clean Air Act, but not the federal act. The area has attained both State and Federal ambient air quality standards for carbon monoxide. As part of an effort to attain and maintain ambient air quality standards for O_3, $PM_{2.5}$ and PM_{10}, the BAAQMD has established thresholds of significance for these air pollutants and their precursors. These thresholds are for O_3 precursor pollutants (ROG and NOx), PM_{10}, and $PM_{2.5}$ and apply to both construction period and operational period impacts.

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

Construction Period Emissions

The California Emissions Estimator Model (CalEEMod) Version 2020.4.0 was used to estimate emissions from on-site construction activity, construction vehicle trips, and evaporative emissions. The project land use types and size, and anticipated construction schedule were input to CalEEMod. The CARB EMission FACtors 2021 (EMFAC2021) model was used to predict emissions from construction traffic, which includes worker travel, vendor trucks, and haul trucks.[12] The CalEEMod model output along with construction inputs are included in *Attachment 2* and EMFAC2021 vehicle emissions modeling outputs are included in *Attachment 3*.

<u>CalEEMod Modeling</u>

Land Use Inputs

The proposed project land uses were entered into CalEEMod as described in Table 2.

Table 2. Summary of Project Land Use Inputs

Project Land Uses	Size	Units	Square Feet	Acreage
Unrefrigerated Warehouse – No Rail	117.94	1,000-sf	117,943	7.37
Parking Lot	147	Parking Spaces	58,800*	
*Default CalEEMod square footages used				

Construction Inputs

CalEEMod computes annual emissions for construction that are based on the project type, size, and acreage. The model provides emission estimates for both on-site and off-site construction activities. On-site activities are primarily made up of construction equipment emissions, while off-site activity includes worker, hauling, and vendor traffic. The construction build-out scenario, including equipment list and schedule, were based on CalEEMod default information that was reviewed and modified by the applicant. The applicant provided the total number of concrete and asphalt truck trips.

The project construction equipment worksheets included the schedule for each phase of construction (included in *Attachment 2*). Within each construction phase, the quantity of equipment to be used along with the average use hours per day were based on CalEEMod default information. The total number of workdays was provided by the applicant but the provided construction end date was modified to match the phase length the applicant provided. The construction schedule assumed that the earliest possible start date would be April 2023 and would be built out over a period of approximately 8 months, or 185 construction workdays. The earliest year of full operation was assumed to be 2024.

[12] See CARB's EMFAC2021 Emissions Inventory at https://arb.ca.gov/emfac/emissions-inventory.

Construction Truck Traffic Emissions

Construction would produce traffic in the form of worker trips and truck traffic. The traffic-related emissions are based on worker and vendor trip estimates produced by CalEEMod and haul trips that were computed based on the estimate of demolition material to be exported, soil imported and/or exported to the site, and the estimate of concrete and asphalt used for construction. CalEEMod provides daily estimates of worker and vendor trips for each applicable phase. The total trips for those were computed by multiplying the daily trip rate by the number of days in that phase.

The latest version of the CalEEMod model is based on the older version of the CARB EMFAC2017 motor vehicle emission factor model. This model has been superseded by the EMFAC2021 model. However, CalEEMod has not been updated to include EMFAC2021. The construction traffic information was combined with EMFAC2021 motor vehicle emissions factors. EMFAC2021 provides aggregate emission rates in grams per mile for each vehicle type. The vehicle mix for this study was based on CalEEMod defaults, where worker trips are assumed to be comprised of light-duty autos (EMFAC category LDA) and light duty trucks (EMFAC category LDT1 and LDT2). Vendor trips are comprised of delivery and large trucks (EMFAC category MHDT and HHDT) and haul trips, including concrete trucks, are comprised of large trucks (EMFAC category HHDT). Travel distances are based on CalEEMod default lengths, which are 10.8 miles for worker travel, 7.3 miles for vendor trips and 20 miles for hauling (demolition material export and soil import/export). Since CalEEMod does not appear to specifically address concrete or asphalt truck trips, these were treated as vendor travel distances. Each trip was assumed to include an idle time of 5 minutes. Emissions associated with vehicle starts were also included. On-road emission rates from the year 2023 for Contra Costa County were used. Table 3 provides the traffic inputs that were combined with EMFAC2021 emission rates to compute vehicle emissions.

Table 3. Construction Traffic Data Used for EMFAC2021 Model Runs

CalEEMod Run/Land Uses and Construction Phase	Trips by Trip Type			Notes
	Total Worker[1]	Total Vendor[1]	Total Haul[2]	
Vehicle mix[1]	50% LDA 25% LDT1 25% LDT2	50% MHDT 50% HHDT	100% HHDT	
Trip Length (miles)	10.8	7.3	20.0	CalEEMod default distance with 5-min truck idle time.
Demolition	-	-	-	No Demolition
Site Preparation	75	-	-	CalEEMod default worker trips.
Grading	130	-	-	CalEEMod default worker trips.
Trenching	100	-	-	CalEEMod default worker trips.
Building Construction	11,100	4,350	20	10 concrete-truck round trips. CalEEMod default worker and vendor trips.
Architectural Coating	450	-	-	CalEEMod default worker trips
Paving	540	-	110	55 asphalt truck round trips. CalEEMod default worker trips.
Notes: [1] Based on 2023 EMFAC2021 light-duty vehicle fleet mix for Contra Costa County. [2] Includes soil hauling trips estimated by CalEEMod based on amount of material to be removed. Cement and asphalt trips estimated based on provided delivery estimates.				

Summary of Computed Construction Period Emissions

Average daily emissions were annualized for each year of construction by dividing the annual construction emissions by the number of active construction workdays that year. Table 4 shows the annualized average daily construction emissions of ROG, NO_X, PM_{10} exhaust, and $PM_{2.5}$ exhaust during construction of the project. As indicated in Table 4, predicted annualized project construction emissions would not exceed the BAAQMD significance thresholds during any year of construction.

Table 4. Construction Period Emissions

Year	ROG	NOx	PM_{10} Exhaust	$PM_{2.5}$ Exhaust
Construction Emissions Per Year (Tons)				
2023	0.79	1.39	0.07	0.06
BAAQMD Thresholds (tons per year)	*10 tons/year*	*10 tons/year*	*15 tons/year*	*10 tons/year*
Exceed Threshold?	No	No	No	No
Average Daily Construction Emissions Per Year (pounds/day)				
2023 (185 construction workdays)	8.53	15.02	0.73	0.65
BAAQMD Thresholds (pounds per day)	*54* lbs./day	*54* lbs./day	*82* lbs./day	*54* lbs./day
Exceed Threshold?	No	No	No	No

Construction activities, particularly during site preparation and grading, would temporarily generate fugitive dust in the form of PM_{10} and $PM_{2.5}$. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after it dries. The BAAQMD CEQA Air Quality Guidelines consider construction impacts to be less-than-significant if best management practices are implemented to reduce these emissions. The City has adopted the BAAQMD CEQA Air Quality Guidelines best management practices to control dust and exhaust during construction activities under the City's General Plan Update Action SE.7.1.1. As a condition of approval, and to ensure compliance with Action SE.7.1.1, and latest BAAQMD best management practices, the project would be required to implement these practices during construction activities. Therefore, air pollutant emissions from the project construction would be less than significant.

Measures to reduce fugitive dust (i.e., $PM_{2.5}$) emissions from construction are recommended to ensure that health impacts to nearby sensitive receptors are minimized. During any construction period ground disturbance, the applicant shall ensure that the project contractor implements basic measures to control dust and exhaust. Implementation of the dust control measures recommended by BAAQMD and listed below would reduce the air quality impacts associated with grading and new construction to a less-than-significant level.

Condition of Approval AQ-1: Implement BAAQMD-Recommended Standard Measures to Control Particulate Matter Emissions during Construction.

The contractor shall implement the following best management practices:

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

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

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

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

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

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

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

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

Effectiveness of Condition of Approval AQ-1

Condition of Approval AQ-1 represents standard measures imposed by the General Plan that would achieve greater than a 50 percent reduction in on-site fugitive $PM_{2.5}$ emissions. These measures are consistent with recommendations in the BAAMQD CEQA Guidance for providing "best management practices" to control construction emissions.

Operational Period Emissions

Operational air emissions from the project would be generated primarily from trucks using the industrial warehouse and autos driven by future employees and vendors or customers. Evaporative ROG emissions from architectural coatings and maintenance products (classified as consumer products) are also associated with these types of projects. CalEEMod was used to estimate emissions from operation of the proposed project assuming full build-out.

<u>CalEEMod Inputs</u>

Land Uses

The project land uses were input to CalEEMod as described above for the construction period modeling.

Model Year

Emissions associated with vehicle travel depend on the year of analysis because emission control technology requirements are phased-in over time. Therefore, the earlier the year analyzed in the model, the higher the emission rates utilized by CalEEMod. The earliest year of full operation would be 2024 if construction begins in 2023. Emissions associated with build-out later than 2024 would be lower.

Traffic Information

CalEEMod allows the user to enter specific vehicle trip generation rates. Therefore, the project-specific daily trip generation rate provided by the traffic consultant was entered into the model.[13] The project would produce 1,310 daily trips. The daily trip generation was calculated using the ITE trip generation rates and the size of the project land uses. The Saturday and Sunday trip rates

[13] Fehr & Peers, Pinole Shores Project – Transportation Impact Analysis Draft Memorandum, January 4, 2023.

were derived by multiplying the ratio of the CalEEMod default rates for Saturday and Sunday trips to the default weekday rate with the project-specific daily weekday trip rate. The default trip lengths and trip types specified by CalEEMod were used.

Operational Truck Traffic Emissions

Based on information provided by the project traffic consultant, there would be 100 truck trips to the project site per day to bring deliveries to and from the project site. These trucks are assumed to be heavy heavy-duty trucks (HHDT) and are a source of long-term DPM emissions. These trucks would travel to and from the site and are anticipated to idle at loading docks for 5 minutes for each trip.

Emissions from these deliveries were calculated using EMFAC2021. A hauling travel distance of 20 miles was assumed to calculate criteria pollutant emissions from the trucks. All delivery trips were assumed to be heavy heavy-duty truck (HHDT) trips. The emissions from truck deliveries are included in Table 5.

EMFAC2021 Adjustment

The vehicle emissions factors and fleet mix used in CalEEMod are based on EMFAC2017, which is an older CARB emissions model for on-road mobile sources. Since the release of CalEEMod Version 2020.4.0, a new emission factor model has been made available by CARB. EMFAC2021 became available for use in January 2021and includes the latest data on California's car and truck fleets and travel activity. The CalEEMod default vehicle emission factors and fleet mix based on EMFAC2017 were updated using the emission rates and fleet mix from EMFAC2021. On road emission rates from 2024 Contra Costa County were used. More details about the updates in emissions calculation methodologies and data are available in the EMFAC2021 Technical Support Document.[14]

Energy

CalEEMod defaults for energy use were used, which include the 2019 Title 24 Building Standards. GHG emissions modeling includes those indirect emissions from electricity consumption. The electricity produced emission rate was modified in CalEEMod. Marin Clean Energy (MCE) is the default electricity provider in Pinole. CalEEMod has a default emission factor of 289.98 pounds of CO_2 per megawatt of electricity produced.

According to the project applicant, the project will be all electric. Therefore, natural gas use for the unrefrigerated warehouse land use was set to zero and reassigned to electricity use in CalEEMod.

[14] See CARB 2021: https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/road-documentation/msei-modeling-tools-emfac

Summary of Computed Operational Period Emissions

Annual emissions were predicted using CalEEMod. The daily emissions were calculated assuming 365 days of operation. Table 5 shows average daily emissions of ROG, NO_X, total PM_{10}, and total $PM_{2.5}$ during operation of the project. The operational period emissions would not exceed the BAAQMD significance thresholds. Model summaries and output are provided in *Attachment 2*.

Table 5. Operational Period Emissions

Scenario	ROG	NOx	PM_{10}	$PM_{2.5}$
2024 Project Operational Emissions (*tons/year*)	1.49	0.78	1.33	0.34
Project Truck Trips (*tons/year*)	0.03	1.79	0.36	0.09
BAAQMD Thresholds (tons /year)	*10 tons*	*10 tons*	*15 tons*	*10 tons*
Exceed Thresholds?	No	No	No	No
2024 Project Operational Emissions (*lbs./day*)[1]	*8.32*	*14.08*	*9.13*	*2.31*
BAAQMD Thresholds (lbs./day)	*54 lbs.*	*54 lbs.*	*82 lbs.*	*54 lbs.*
Exceed Threshold?	No	No	No	No

Notes: [1] Assumes 365-day operation.

Impact AIR-3: Expose sensitive receptors to substantial pollutant concentrations?

Project impacts related to increased health risk can occur either by introducing a new source of TACs with the potential to adversely affect existing sensitive receptors in the project vicinity or by significantly exacerbating existing cumulative TAC impacts. This project would introduce new sources of TACs during construction (i.e., on-site construction and truck hauling emissions) and operation (i.e., mobile sources).

Project construction activity would generate dust and equipment exhaust that would affect nearby sensitive receptors. Traffic generated by the project would consist of mostly light-duty gasoline-powered vehicles along with some trucks, which would produce TAC and air pollutant emissions.

Project impacts to existing sensitive receptors were addressed for temporary construction activities and long-term operational conditions. There are also several sources of existing TACs and localized air pollutants in the vicinity of the project. The impact of the existing sources of TAC was also assessed in terms of the cumulative risk which includes the project contribution.

Health Risk Methodology for Construction and Operation

Health risk impacts were addressed by predicting increased lifetime cancer risk, the increase in annual $PM_{2.5}$ concentrations, and by computing the Hazard Index (HI) for non-cancer health risks. The risk impacts from the project are the combination of risks from construction and operation sources. These sources include on-site construction activity, construction truck hauling, and increased traffic from the project. To evaluate the increased cancer risks from the project, a 30-year exposure period was used, per BAAQMD guidance,[15] with the sensitive receptors being exposed to both project construction and operation emissions during this timeframe.

[15] BAAQMD, 2016. *BAAQMD Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines*. December 2016.

The project increased cancer risk is computed by summing the project construction cancer risk and operation cancer risk contributions. Unlike the increased maximum cancer risk, the annual $PM_{2.5}$ concentration and HI values are not additive but based on the annual maximum values over the entirety of the project. The project maximally exposed individual (MEI) is identified as the sensitive receptor that is most impacted by the project's construction and operation.

The methodology for computing health risks impacts is contained in *Attachment 1*. This involved the calculation of TAC and $PM_{2.5}$ emissions, dispersion modeling of these emissions, and computations of cancer risk and non-cancer health effects.

Modeled Sensitive Receptors

Receptors for this assessment included locations where sensitive populations would be present for extended periods of time (i.e., chronic exposures). This includes the nearby residences to the north and east of the project site, as shown in Figure 1. Residential receptors are assumed to include all receptor groups (i.e., third trimester, infants, children, and adults) with almost continuous exposure to project emissions.

Community Health Risk from the Project

The primary health risk impact issues associated with construction emissions are cancer risk and exposure to $PM_{2.5}$. A health risk assessment of the project construction activities was conducted that evaluated potential health effects to nearby sensitive receptors from construction emissions of DPM and $PM_{2.5}$.[16] This assessment included dispersion modeling to predict the offsite concentrations resulting from project construction, so that lifetime cancer risks and non-cancer health effects could be evaluated.

<u>Construction Emissions</u>

The CalEEMod and EMFAC2021 models provided total annual PM_{10} exhaust emissions (assumed to be DPM) for the off-road construction equipment and for exhaust emissions from on-road vehicles, with total DPM emissions from all construction stages estimated to be 0.06 tons (123 pounds). The on-road emissions are a result of haul truck travel, worker travel, and vendor deliveries during construction. A trip length of half a mile was used to represent vehicle travel while at or near the construction site. It was assumed that these emissions from on-road vehicles traveling at or near the site would occur at the construction site. Fugitive $PM_{2.5}$ dust emissions were calculated by CalEEMod and EMFAC2021 to be 0.03 tons (69 pounds) for the overall construction period.

<u>Dispersion Modeling</u>

The U.S. EPA AERMOD dispersion model was used to predict DPM and $PM_{2.5}$ concentrations at sensitive receptors (i.e., residences) in the vicinity of the project construction area. The AERMOD dispersion model is a BAAQMD-recommended model for use in modeling analysis of these types

[16] DPM is identified by California as a toxic air contaminant due to the potential to cause cancer.

of emission activities for CEQA projects.[17,18] Emission sources for the construction site were grouped into two categories: exhaust emissions of DPM and fugitive $PM_{2.5}$ dust emissions.

Construction Sources

To represent the construction equipment exhaust emissions, an area source emission release height of 20 feet (6 meters) was used for the area source.[19] The release height incorporates both the physical release height from the construction equipment (i.e., the height of the exhaust pipe) and plume rise after it leaves the exhaust pipe. Plume rise is due to both the high temperature of the exhaust and the high velocity of the exhaust gas. It should be noted that when modeling an area source, plume rise is not calculated by the AERMOD dispersion model as it would do for a point source (exhaust stack). Therefore, the release height from an area source used to represent emissions from sources with plume rise, such as construction equipment, should be based on the height the exhaust plume is expected to achieve, not just the height of the top of the exhaust pipe.

For modeling fugitive $PM_{2.5}$ emissions, a near-ground level release height of 7 feet (2 meters) was used for the area source. Fugitive dust emissions at construction sites come from a variety of sources, including truck and equipment travel, grading activities, truck loading (with loaders) and unloading (rear or bottom dumping), loaders and excavators moving and transferring soil and other materials, etc. All of these activities result in fugitive dust emissions at various heights at the point(s) of generation. Once generated, the dust plume will tend to rise as it moves downwind across the site and exit the site at a higher elevation than when it was generated. For all these reasons, a 7-foot release height was used as the average release height across the construction site. Emissions from the construction equipment and on-road vehicle travel were distributed throughout the modeled area sources. Figure 1 shows the project construction site and receptors.

<u>Operational Truck Traffic Emissions</u>

As discussed above in the operational period emissions section, there would be 100 truck trips to the project site per day. These trucks are assumed to be heavy heavy-duty trucks (HHDT) and are a source of long-term DPM emissions. These trucks would travel to and from the site and are anticipated to idle at loading docks for 5 minutes for each trip.

Emissions from these deliveries were calculated using EMFAC2021. Since specific inbound/outbound routes for the trucks was not provided by the applicant, an on-site travel distance of a half mile was assumed. Further, access road travel distance of a quarter mile and three tenths of a mile travel on San Pablo Avenue was also assumed. All delivery trips were assumed to be HHDT trips. Exhaust emissions and fugitive $PM_{2.5}$ emissions from the on-site travel were input into AERMOD as area sources in the same manner as described above for the construction

[17] BAAQMD, 2012, *Recommended Methods for Screening and Modeling Local Risks and Hazards, Version 3.0.* May. Web: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/risk-modeling-approach-may-2012.pdf?la=en

[18] BAAQMD, 2020, *BAAQMD Health Risk Assessment Modeling Protocol.* December. Web: https://www.baaqmd.gov/~/media/files/ab617-community-health/facility-risk-reduction/documents/baaqmd_hra_modeling_protocol-pdf.pdf?la=en

[19] California Air Resource Board, 2007. *Proposed Regulation for In-Use Off-Road Diesel Vehicles, Appendix D: Health Risk Methodology*. April. Web: https://ww3.arb.ca.gov/regact/2007/ordiesl07/ordiesl07.htm

emissions. Similarly, area sources along a line (i.e., line area source) were used to represent emissions from truck exhaust (i.e., DPM) and fugitive $PM_{2.5}$ emissions from travel on San Pablo Avenue and the access road from San Pablo Avenue to the project site.

AERMOD Inputs and Meteorological Data

The modeling used a five-year meteorological data set (2013-2017) from the Conoco Philips Hillcrest site prepared for use with the AERMOD model by the BAAQMD. Construction emissions were modeled as occurring Monday through Friday between 7:00 a.m. to 7:00 p.m., when the majority of construction and truck activity would occur according to the project applicant. Annual DPM and $PM_{2.5}$ concentrations from construction activities during the 2023 period and truck activity during the 2024 period were calculated using the model. DPM and $PM_{2.5}$ concentrations were calculated at nearby sensitive receptors. Receptor heights of 5 feet (1.5 meters) and 15 feet (4.5 meters) were used to represent the breathing height on the first and second floors of nearby single- and multi-family residences.[20]

Summary of Construction Health Risk Impacts

The maximum increased cancer risks were calculated using the modeled TAC concentrations combined with the OEHHA guidance for age sensitivity factors and exposure parameters as recommended by BAAQMD (*Attachment 1)*. Non-cancer health hazards and maximum $PM_{2.5}$ concentrations were also calculated and identified. Age-sensitivity factors reflect the greater sensitivity of infants and small children to cancer causing TACs. Third trimester, infant, child, and adult exposures were assumed to occur at all residences during the entire construction period.

The maximum modeled annual $PM_{2.5}$ concentration was calculated based on combined exhaust and fugitive concentrations. The maximum computed HI value was based on the ratio of the maximum DPM concentration modeled and the chronic inhalation DPM reference exposure level of 5 $\mu g/m^3$.

The maximum modeled annual DPM and $PM_{2.5}$ concentrations were identified at nearby sensitive receptors to find the MEI. The risk impacts from a project are the combination of construction and operation sources. These sources include one year of on-site construction activity and twenty-nine years of operational truck traffic. The maximum project cancer risk impact is computed by adding the construction cancer risk for an infant/child to the increased cancer risk for the project operational conditions from the truck traffic at the MEI. Residential sensitive receptors were assumed to be present near the site for up to 30 years. The cancer risks from construction and operation of the project were summed together. Unlike the increased maximum cancer risk, the annual $PM_{2.5}$ concentration and HI risks are not cumulative but based on an annual maximum risk for the entirety of the project.

Results of this assessment indicated that the project MEI was located on the first floor (1.5 meters) of a multi-family residence east of the project site. The location of the MEI and nearby sensitive receptors are shown in Figure 1. Table 6 summarizes the maximum cancer risks, $PM_{2.5}$

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[20] Bay Area Air Quality Management District, 2012, Recommended Methods for Screening and Modeling Local Risks and Hazards, Version 3.0. May. Web: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/risk-modeling-approach-may-2012.pdf?la=en

concentrations, and health hazard indexes for project related construction activities. *Attachment 4* to this report includes the emission calculations used for the construction modeling and the cancer risk calculations.

Table 6. Project Risk Impacts at the Off-Site Receptors

Source		Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
Project Construction (Years 0-1)	Without COA With COA	**29.02 (infant)** 3.49 (infant)	0.28 0.07	0.03 <0.01
Project Truck Trips (Years 1-30)		4.52 (infant)	0.01	<0.01
Total/Maximum Project Impacts (Years 0-30)	Without COA With COA	**33.54 (infant)** 8.01 (infant)	0.28 0.07	0.03 <0.01
	BAAQMD Single-Source Threshold	***10***	***0.3***	***1.0***
Exceed Threshold?	Without COA With COA	***Yes*** *No*	*No* *No*	*No* *No*

Conditions of Approval AQ-2: Use construction equipment that has low diesel particulate matter exhaust to minimize emissions and limit use of diesel-powered stationary equipment.

Implement a feasible plan to reduce DPM emissions by 75 percent such that increased cancer risk and annual $PM_{2.5}$ concentrations from construction would be reduced below TAC significance levels as follows:

1. All construction equipment larger than 25 horsepower used at the site for more than two continuous days or 20 hours total shall meet U.S. EPA Tier 4 emission standards for particulate matter (PM_{10} and $PM_{2.5}$), if feasible, otherwise,

    a. If use of Tier 4 equipment is not available, alternatively use equipment that meets U.S. EPA emission standards for Tier 2 or 3 engines and include particulate matter emissions control equivalent to CARB Level 3 verifiable diesel emission control devices that altogether achieve a 75 percent reduction in particulate matter exhaust in comparison to uncontrolled equipment; alternatively (or in combination).

2. Alternatively, the applicant may develop another construction operations plan demonstrating that the construction equipment used on-site would achieve a reduction in construction diesel particulate matter emissions by 75 percent or greater. Elements of the plan could include a combination of some of the following measures:
    - Implementation of No. 1 above to use Tier 4 engines or alternatively fueled equipment,
    - Installation of electric power lines during early construction phases to avoid use of diesel generators and compressors,
    - Use of electrically-powered equipment,
    - Forklifts and aerial lifts used for exterior and interior building construction shall be electric or propane/natural gas powered,
    - Change in construction build-out plans to lengthen phases, and

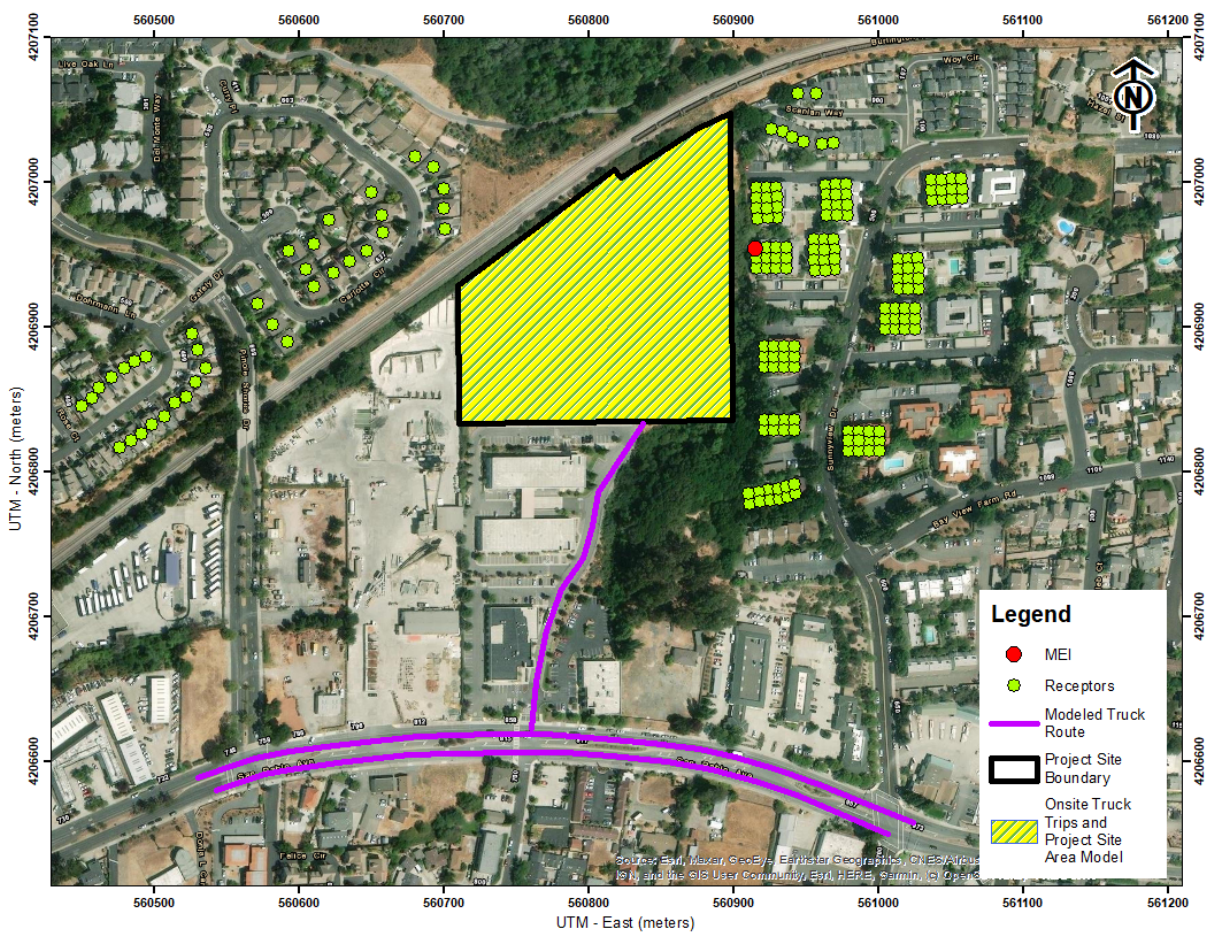
- Implementation of different building techniques that result in less diesel equipment usage.

Such a construction operations plan would be subject to review by an air quality expert and approved by the City prior to construction.

Effectiveness of Conditions of Approval AQ-1 and AQ-2

CalEEMod was used to compute emissions associated with these conditions of approval assuming that all equipment met U.S. EPA Tier 4 Interim engine standards and BAAQMD best management practices for construction were included. With these conditions implemented, the project's construction cancer risk impact, assuming infant exposure, would be reduced by 88 percent to 3.49 per million and the combined project cancer risk impact would be reduced to 8.01 per million at the residential MEI. A plan that reduces DPM emissions by 75 percent would reduce cancer risk to below the BAAQMD single-source threshold. As a result, the project's construction and operational risk impacts are considered less than significant.

Figure 1. Locations of Project Construction Site, Off-Site Sensitive Receptors, Truck Route, Onsite Trucks, and Maximum TAC Impact Location (MEI)

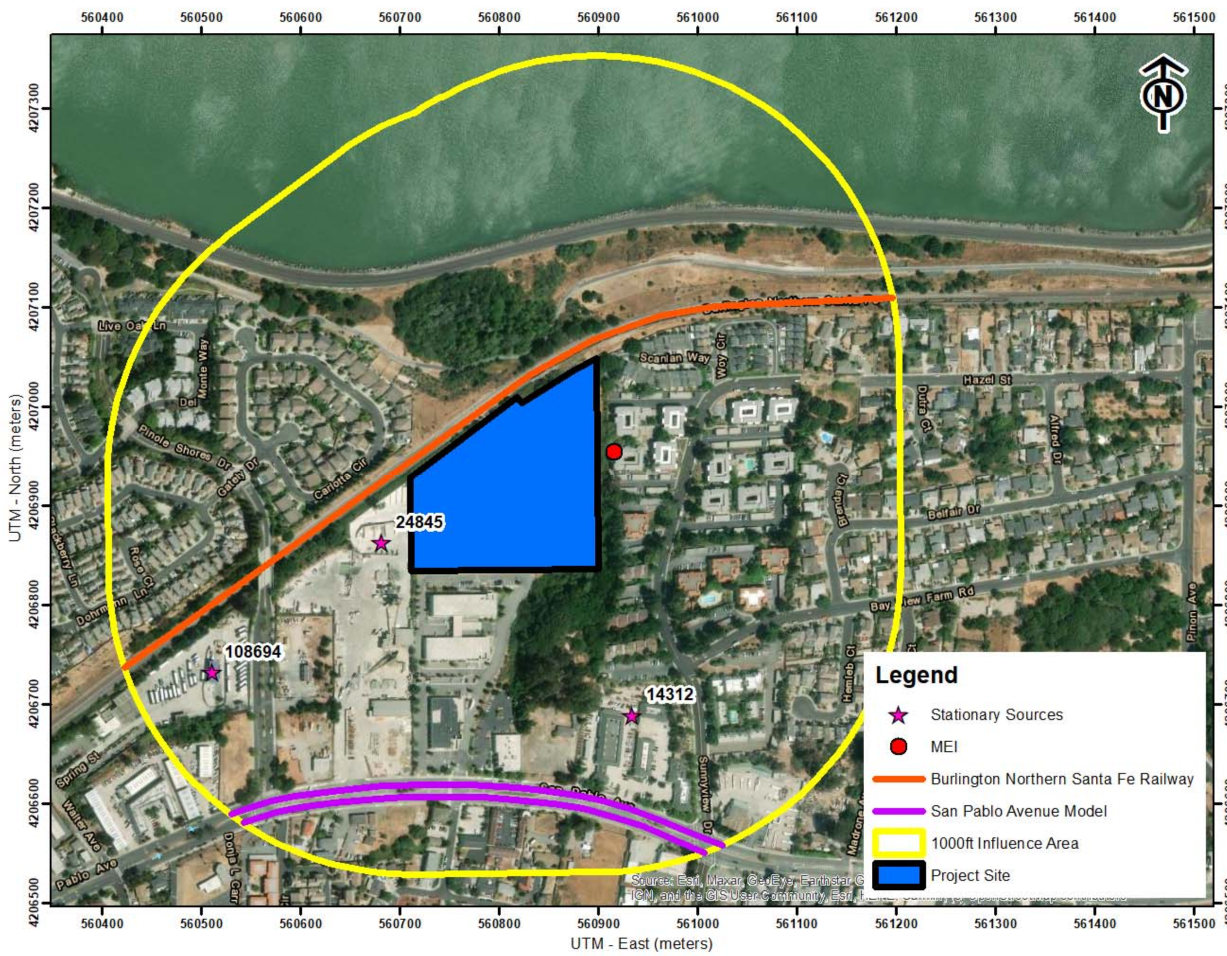


Cumulative Health Risks of all TAC Sources at the Off-Site Project MEI

Community health risk assessments typically look at all substantial sources of TACs that can affect sensitive receptors that are located within 1,000 feet of a project site (i.e., influence area). These sources include rail lines, highways, busy surface streets, and stationary sources identified by BAAQMD.

A review of the traffic data provided by the applicant's traffic consultant found that one roadway, San Pablo Avenue, within 1,000 feet of the project site would have traffic exceeding 10,000 vehicles per day. All other roadways would have less than 10,000 vehicles per day. A review of BAAQMD's stationary source geographic information systems (GIS) map tool identified three stationary sources within the influence area. Figure 3 shows the project area, TAC sources within the influence area, and the location of the MEI. Details of the modeling and health risk calculations are included in *Attachment 5*.

Figure 2. Project Site and Nearby TAC and $PM_{2.5}$ Sources



Local Roadways – San Pablo Avenue

A refined analysis of potential health impacts from vehicle traffic on San Pablo Avenue was conducted. This analysis involved predicting emissions for the traffic volume and mix of vehicle types on the roadway near the project site and using an atmospheric dispersion model to predict exposure to TACs. The associated cancer risks were then computed based on the modeled exposures. *Attachment 1* includes a description of how health risk impacts, including cancer risk are computed.

Traffic Emissions Modeling

This analysis involved the development of DPM, organic TACs, and $PM_{2.5}$ emissions for traffic on San Pablo Avenue using the Caltrans version of the CARB EMFAC2017 emissions model, known as CT-EMFAC2017. CT-EMFAC2017 provides emission factors for mobile source criteria pollutants and TACs, including DPM. Emission processes modeled include running exhaust for DPM, $PM_{2.5}$ and total organic compounds (TOG), running evaporative losses for TOG, and tire and brake wear and fugitive road dust for $PM_{2.5}$. $PM_{2.5}$ emissions from all vehicles were used, rather than just the $PM_{2.5}$ fraction from diesel powered vehicles, because all vehicle types (i.e., gasoline and diesel powered) produce $PM_{2.5}$. Additionally, $PM_{2.5}$ emissions from vehicle tire and brake wear and from re-entrained roadway dust were included in the emissions estimate. DPM emissions are projected to decrease in the future as reflected in the CT-EMFAC2017 emissions data. Inputs to the model include region (Contra Costa County), type of road (major/collector), truck percentage for non-state highways in Contra Costa County (3.59 percent),[21] traffic mix assigned by CT-EMFAC2017 for the county, year of analysis (2023 – construction start year), and season (annual).

To estimate TAC and $PM_{2.5}$ emissions over the 30-year exposure period used for calculating the increased cancer risks for sensitive receptors at the MEI, the CT-EMFAC2017 model was used to develop vehicle emission factors for the year 2023 (project construction year). Emissions associated with vehicle travel depend on the year of analysis because emission control technology requirements are phased-in over time. Therefore, the earlier the year analyzed in the model, the higher the emission rates utilized by CT-EMFAC2017. Year 2023 emissions were conservatively assumed as being representative of future conditions over the time period that cancer risks are evaluated since, as discussed above, overall vehicle emissions, and in particular diesel truck emissions, will decrease in the future.

Average hourly traffic distributions for Contra Costa County roadways were developed using the EMFAC model,[22] which were then applied to the average daily traffic (ADT) volumes to obtain estimated hourly traffic volumes and emissions for the roadway. The estimated ADT for San Pablo Avenue was 18,544 vehicles based on a 1% increase per year from a measured ADT of 18,360

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[21] Bay Area Air Quality Management District, 2012, *Recommended Methods for Screening and Modeling Local Risks and Hazards, Version 3.0.* May. Web: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/risk-modeling-approach-may-2012.pdf?la=en

[22] The Burden output from EMFAC2007, a previous version of CARB's EMFAC model, was used for this since the current web-based version of EMFAC2021 does not include Burden type output with hour-by-hour traffic volume information.

vehicles in 2022. An average travel speed of 40 miles per hour (mph) on each roadway was used for all hours of the day based on posted speed limit signs.

Dispersion Modeling

Dispersion modeling of TAC and $PM_{2.5}$ emissions was conducted using the EPA AERMOD air quality dispersion model, which is recommended by the BAAQMD for this type of analysis.[23] TAC and $PM_{2.5}$ emissions from traffic on San Pablo Avenue within 1,000 feet of the project site were evaluated. Vehicle traffic on the roadways was modeled using a series of adjacent volume sources along a line (line volume sources); with line segments used for each travel direction on the roadway. The same meteorological data and off-site sensitive receptors used in the previous dispersion modeling were used in the roadway modeling. Other inputs to the model included road geometry, hourly traffic emissions, and receptor locations. Annual TAC and $PM_{2.5}$ concentrations for 2023 from traffic on the roadway was calculated using the model. Concentrations were calculated at the project MEI with receptor heights of 5 feet (1.5 meters) to represent the breathing heights on the first floor in the nearby residence.

Figure 2 shows the roadway segments modeled and residential receptor locations used in the modeling. Table 6 lists the risks and hazards from the roadway. The emission rates and roadway calculations used in the analysis are shown in *Attachment 5*.

Computed Cancer and Non-Cancer Health Impacts

The cancer risk, $PM_{2.5}$ concentration, and HI impacts from the roadway on the off-site MEI are shown in Table 7. Figure 2 shows the roadway links modeled and receptor locations where concentrations were calculated. Details of the emission calculations, dispersion modeling, and cancer risk calculations for the receptors with the maximum cancer risk from roadway traffic are provided in *Attachment 5.*

Railways – Burlington Northern Santa Fe Railroad

The project MEI is located near the Burlington Northern Santa Fe railway. Railway health risk screening data provided by BAAQMD was incorporated into this analysis. BAAQMD developed raster files with cancer risk and $PM_{2.5}$ values for all highways/freeways, roadways (ADT > 30,000), and rail lines within the Bay Area. These raster files were used to screen the Burlington Northern Santa Fe railway risks and hazards upon the project site. The risk values shown in the raster files were modeled using AERMOD and a 20x20-meter emissions grid. The raster file uses EMFAC2014 data for fleet mix and include the OEHHA 2015 factor.

The railway screening level impacts are listed in Table 7 and included in *Attachment 5*. Refined modeling of the railway would have resulted in even lower risk values. Note that BAAQMD has found that non-cancer hazards were found to be minimal, so an HI value is not included.

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[23] BAAQMD. *Recommended Methods for Screening and Modeling Local Risks and Hazards*. May 2012

BAAQMD Permitted Stationary Sources

Permitted stationary sources of air pollution near the project site were identified using BAAQMD's *Permitted Stationary Sources 2020* GIS website,[24] which identifies the location of nearby stationary sources and their estimated risk and hazard impacts, including emissions and adjustments to account for new OEHHA guidance. Three sources, a gas dispensing facility, a concrete manufacturer, and an auto body shop, were identified using this tool. A Stationary Source Information Form (SSIF) containing the identified sources was prepared and submitted to BAAQMD. BAAQMD provided input and clarification about the stationary sources. The screening level risks and hazards provided by BAAQMD for the stationary sources were adjusted for distance using BAAQMD's *Distance Adjustment Multiplier Tool for Gasoline Dispensing Facility and Generic Equipment*. Health risk impacts from stationary sources upon the MEI are reported in Table 7.

Stationary-Source: Central Concrete Pinole Plant (Plant #24845)

The project site is near a ready-mix concrete manufacturing plant, Central Concrete Pinole Plant, that is permitted to operate as Plant #24845. Concrete plants are a source of $PM_{2.5}$ emissions associated with the pulverization of raw material and other processes at the facility. BAAQMD provides screening $PM_{2.5}$ risk predictions for this facility through their Source Risk & Hazards Screening Report that was ran on September 9, 2022. The screening annual $PM_{2.5}$ concentration at the facility was reported at 5.9 ug/m^3. Since screening projections indicated the annual $PM_{2.5}$ emissions would be far above the single-source threshold, the next step in this evaluation was to conduct a more refined screening assessment of the facility based on additional tools. This involved obtaining actual emissions data for the facility through a public information request to BAAQMD to obtain facility $PM_{2.5}$ emission rates.[25]

For modeling fugitive $PM_{2.5}$ emissions, an area source with a near-ground level release height of 7 feet (2 meters) was used. The emission rate for the area source was based on the size of the parcel the Central Concrete plant is located on, and the $PM_{2.5}$ emissions reported by BAAQMD. It is assumed that the emissions generated by the Central Concrete plant would be distributed evenly over the entire area source. Once generated, the dust plume will tend to rise as it moves downwind across the site and exit the site at a higher elevation than when it was generated. For this reason, a 7-foot release height was used as the average release height across the Central Concrete site. The emission rates and source calculations used in the analysis are shown in *Attachment 5*.

Summary of Cumulative Health Risk Impact at Construction MEI

Table 7 reports both the project and cumulative health risk impacts at the sensitive receptors most affected by the project (i.e., the MEI). The health risks from project activities would exceed the maximum increased cancer risk single-source threshold. However, with the implementation of *Condition of Approval AQ-1 and AQ-2*, the increased cancer risk would no longer exceed the BAAQMD single-source threshold. Further, regardless of application of AQ-1 and AQ-2, none of

[24] BAAQMD, https://baaqmd.maps.arcgis.com/apps/webappviewer/index.html?id=845658c19eae4594b9f4b805fb9d89a3

[25] Correspondence with Matthew Hanson, Environmental Planner II, BAAQMD, October 10, 2022.

the BAAQMD cumulative-source thresholds are exceeded. Therefore, the cumulative health risk impacts at the construction MEI are considered to be less than significant. All cancer risk calculations assume that an infant is present during the period of time when the highest emissions from project construction occur. This ensures that the quantified cancer risk is the highest possible risk value.

Table 7. Impacts from Combined Sources at Project MEI

Source		Cancer Risk (per million)	Annual $PM_{2.5}$ (µg/m^3)	Hazard Index
Project Impacts				
Project Total/Maximum	Without COA	**33.54 (infant)**	0.28	0.03
	With COA	8.01 (infant)	0.07	<0.01
BAAQMD Single-Source Threshold		***10***	***0.3***	***1.0***
Exceed Threshold?	Without COA	***Yes***	*No*	*No*
	With COA	*No*	*No*	*No*
Cumulative Sources				
Crocketts Premier Auto Body (Facility ID #14312, Automotive Body, Paint, and Interior Repair and Maintenance), MEI at 955 ft		-	-	<0.01
Central Concrete Pinole Plant (Facility ID #24845, Ready-Mix Concrete Manufacturing), MEI at 850 ft[1]		-	0.12	-
Western Contra Costa Transit Authority (Facility ID #108694_1, Gas Dispensing Facility), MEI at 1000+ ft		0.01	-	<0.01
Burlington Northern Santa Fe Railway		12.95	0.02	-
San Pablo Avenue, 18,544 ADT		0.19	0.01	<0.01
Combined Sources	Without COA	46.69	0.43	<0.06
	With COA	21.16	0.22	<0.04
BAAQMD Cumulative Source Threshold		***100***	***0.8***	***10.0***
Exceed Threshold?	Without COA	*No*	*No*	*No*
	With COA	*No*	*No*	*No*

[1] The annual $PM_{2.5}$ concentration for the Central Concrete source was modeled using AERMOD.

GREENHOUSE GAS EMISSIONS

Setting

Gases that trap heat in the atmosphere, GHGs, regulate the earth's temperature. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate. The most common GHGs are carbon dioxide (CO_2) and water vapor but there are also several others, most importantly methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). These are released into the earth's atmosphere through a variety of natural processes and human activities. Sources of GHGs are generally as follows:

- CO_2, CH_4, and N_2O are byproducts of fossil fuel combustion.
- N_2O is associated with agricultural operations such as fertilization of crops.
- CH_4 is commonly created by off-gassing from agricultural practices (e.g., keeping livestock) and landfill operations.
- Chlorofluorocarbons (CFCs) were widely used as refrigerants, propellants, and cleaning solvents but their production has been stopped by international treaty.
- HFCs are now used as a substitute for CFCs in refrigeration and cooling.
- PFCs and sulfur hexafluoride emissions are commonly created by industries such as aluminum production and semi-conductor manufacturing.

Each GHG has its own potency and effect upon the earth's energy balance. This is expressed in terms of a global warming potential (GWP), with CO_2 being assigned a value of 1 and sulfur hexafluoride being several orders of magnitude stronger. In GHG emission inventories, the weight of each gas is multiplied by its GWP and is measured in units of CO_2 equivalents (CO_2e).

An expanding body of scientific research supports the theory that global climate change is currently affecting changes in weather patterns, average sea level, ocean acidification, chemical reaction rates, and precipitation rates, and that it will increasingly do so in the future. The climate and several naturally occurring resources within California are adversely affected by the global warming trend. Increased precipitation and sea level rise will increase coastal flooding, saltwater intrusion, and degradation of wetlands. Mass migration and/or loss of plant and animal species could also occur. Potential effects of global climate change that could adversely affect human health include more extreme heat waves and heat-related stress; an increase in climate-sensitive diseases; more frequent and intense natural disasters such as flooding, hurricanes and drought; and increased levels of air pollution.

Federal and Statewide GHG Emissions

The U.S. EPA reported that in 2022, total gross nationwide GHG emissions were 5,215.6 million metric tons (MMT) carbon dioxide equivalent (CO_2e).[26] These emissions were lower than peak levels of 7,416 MMT that were emitted in 2007. CARB updates the statewide GHG emission

[26] United States Environmental Protection Agency, 2022. *Draft Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2020*. February. Web: https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks

inventory on an annual basis where the latest inventory includes 2000 through 2019 emissions.[27] In 2019, GHG emissions from statewide emitting activities were 418.2 MMT CO_2e. The 2019 emissions have decreased by 30 percent since peak levels in 2007 and are 7.2 MMT CO_2e lower than 2018 emissions level and almost 13 MMT CO_2e below the State's 2020 GHG limit of 431 MMT CO_2e. Per capita GHG emissions in California have dropped from a 2001 peak of 14.0 MT CO_2e per person to 10.5 MT CO_2e per person in 2019.

Recent Regulatory Actions for GHG Emissions

Executive Order S-3-05 – California GHG Reduction Targets

Executive Order (EO) S-3-05 was signed by Governor Arnold Schwarzenegger in 2005 to set GHG emission reduction targets for California. The three targets established by this EO are as follows: (1) reduce California's GHG emissions to 2000 levels by 2010, (2) reduce California's GHG emissions to 1990 levels by 2020, and (3) reduce California's GHG emissions by 80 percent below 1990 levels by 2050.

Assembly Bill 32 – California Global Warming Solutions Act (2006)

Assembly Bill (AB) 32, the Global Warming Solutions Act of 2006, codified the State's GHG emissions target by directing CARB to reduce the State's global warming emissions to 1990 levels by 2020. AB 32 was signed and passed into law by Governor Schwarzenegger on September 27, 2006. Since that time, the CARB, CEC, California Public Utilities Commission (CPUC), and Building Standards Commission have all been developing regulations that will help meet the goals of AB 32 and Executive Order S-3-05, which has a target of reducing GHG emissions 80 percent below 1990 levels.

A Scoping Plan for AB 32 was adopted by CARB in December 2008. It contains the State's main strategies to reduce GHGs from business-as-usual emissions projected in 2020 back down to 1990 levels. Business-as-usual (BAU) is the projected emissions in 2020, including increases in emissions caused by growth, without any GHG reduction measures. The Scoping Plan has a range of GHG reduction actions, including direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms such as a cap-and-trade system.

As directed by AB 32, CARB has also approved a statewide GHG emissions limit. On December 6, 2007, CARB staff resolved an amount of 427 million metric tons (MMT) of CO_2e as the total statewide GHG 1990 emissions level and 2020 emissions limit. The limit is a cumulative statewide limit, not a sector- or facility-specific limit. CARB updated the future 2020 BAU annual emissions forecast, in light of the economic downturn, to 545 MMT of CO_2e. Two GHG emissions reduction measures currently enacted that were not previously included in the 2008 Scoping Plan baseline inventory were included, further reducing the baseline inventory to 507 MMT of CO_2e. Thus, an estimated reduction of 80 MMT of CO_2e is necessary to reduce statewide emissions to meet the AB 32 target by 2020.

[27] CARB. 2021. *California Greenhouse Gas Emission for 2000 to 2019*. Web: https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2019/ghg_inventory_trends_00-19.pdf

Executive Order B-30-15 & Senate Bill 32 GHG Reduction Targets – 2030 GHG Reduction Target

In April 2015, Governor Brown signed EO B-30-15, which extended the goals of AB 32, setting a GHG emissions target at 40 percent of 1990 levels by 2030. On September 8, 2016, Governor Brown signed Senate Bill (SB) 32, which legislatively established the GHG reduction target of 40 percent of 1990 levels by 2030. In November 2017, CARB issued *California's 2017 Climate Change Scoping Plan*.[28] While the State is on track to exceed the AB 32 scoping plan 2020 targets, this plan is an update to reflect the enacted SB 32 reduction target.

SB 32 was passed in 2016, which codified a 2030 GHG emissions reduction target of 40 percent below 1990 levels. CARB has drafted a 2022 Scoping Plan Update to reflect the 2030 target set by Executive Order B-30-15 and codified by SB 32. The 2022 draft plan:

- Identifies a path to keep California on track to meet its SB 32 GHG reduction target of at least 40 percent below 1990 emissions by 2030.
- Identifies a technologically feasible, cost-effective path to achieve carbon neutrality by 2045 or earlier.
- Focuses on strategies for reducing California's dependency on petroleum to provide consumers with clean energy options that address climate change, improve air quality, and support economic growth and clean sector jobs.
- Integrates equity and protecting California's most impacted communities as a driving principle.
- Incorporates the contribution of natural and working lands to the state's GHG emissions, as well as its role in achieving carbon neutrality.
- Relies on the most up to date science, including the need to deploy all viable tools, including carbon capture and sequestration as well a direct air capture.
- Evaluates multiple options for achieving our GHG and carbon neutrality targets, as well as the public health benefits and economic impacts associated with each.

The draft Scoping Plan Update was published on May 10, 2022 and, once final, will lay out how the state can get to carbon neutrality by 2045 or earlier. It is also the first Scoping Plan that adds carbon neutrality as a science-based guide and touchstone beyond statutorily established emission reduction targets.[29]

The mid-term 2030 target is considered critical by CARB on the path to obtaining an even deeper GHG emissions target of 80 percent below 1990 levels by 2050, as directed in Executive Order S-3-05. The 2022 Draft Scoping Plan outlines the suite of policy measures, regulations, planning efforts, and investments in clean technologies and infrastructure, providing a blueprint to continue driving down GHG emissions and to not only obtain the statewide goals, but cost-effectively achieve carbon-neutrality by 2045 or earlier. In the draft 2022 Scoping Plan, CARB recommends:

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[28] California Air Resource Board, 2017. *California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Targets.* November. Web: https://ww2.arb.ca.gov/sites/default/files/classic//cc/scopingplan/scoping_plan_2017.pdf

[29] https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents

- VMT per capita reduced 12% below 2019 levels by 2030 and 22% below 2019 levels by 2045.
- 100% of Light-duty vehicle sales are zero emissions vehicles (ZEV) by 2035.
- 100% of medium duty/heavy duty vehicle sales are ZEV by 2040.
- 100% of passenger and other locomotive sales are ZEV by 2030.
- 100% of line haul locomotive sales are ZEV by 2035.
- All electric appliances in new residential and commercial building beginning 2026 (residential) and 2029 (commercial).
- 80% of residential appliance sales are electric by 2030 and 100% of residential appliance sales are electric by 2035.
- 80% of commercial appliance sales are electric by 2030 and 100% of commercial appliance sales are electric by 2045.

Executive Order B-55-18 – Carbon Neutrality

In 2018, a new statewide goal was established to achieve carbon neutrality as soon as possible, but no later than 2045, and to maintain net negative emissions thereafter. CARB and other relevant state agencies are tasked with establishing sequestration targets and create policies/programs that would meet this goal.

Senate Bill 375 – California's Regional Transportation and Land Use Planning Efforts (2008)

California enacted legislation (SB 375) to expand the efforts of AB 32 by controlling indirect GHG emissions caused by urban sprawl. SB 375 provides incentives for local governments and applicants to implement new conscientiously planned growth patterns. This includes incentives for creating attractive, walkable, and sustainable communities and revitalizing existing communities. The legislation also allows applicants to bypass certain environmental reviews under CEQA if they build projects consistent with the new sustainable community strategies. Development of more alternative transportation options that would reduce vehicle trips and miles traveled, along with traffic congestion, would be encouraged. SB 375 enhances CARB’s ability to reach the AB 32 goals by directing the agency in developing regional GHG emission reduction targets to be achieved from the transportation sector for 2020 and 2035. CARB works with the metropolitan planning organizations (e.g. Association of Bay Area Governments [ABAG] and Metropolitan Transportation Commission [MTC]) to align their regional transportation, housing, and land use plans to reduce vehicle miles traveled and demonstrate the region's ability to attain its GHG reduction targets. A similar process is used to reduce transportation emissions of ozone precursor pollutants in the Bay Area.

Senate Bill 350 - Renewable Portfolio Standards

In September 2015, the California Legislature passed SB 350, which increases the states Renewables Portfolio Standard (RPS) for content of electrical generation from the 33 percent target for 2020 to a 50 percent renewables target by 2030.

Senate Bill 100 – Current Renewable Portfolio Standards

In September 2018, SB 100 was signed by Governor Brown to revise California's RPS program goals, furthering California's focus on using renewable energy and carbon-free power sources for its energy needs. The bill would require all California utilities to supply a specific percentage of their retail sales from renewable resources by certain target years. By December 31, 2024, 44 percent of the retails sales would need to be from renewable energy sources, by December 31, 2026 the target would be 40 percent, by December 31, 2017 the target would be 52 percent, and by December 31, 2030 the target would be 60 percent. By December 31, 2045, all California utilities would be required to supply retail electricity that is 100 percent carbon-free and sourced from eligible renewable energy resource to all California end-use customers.

California Building Standards Code – Title 24 Part 11 & Part 6

The California Green Building Standards Code (CALGreen Code) is part of the California Building Standards Code under Title 24, Part 11.[30] The CALGreen Code encourages sustainable construction standards that involve planning/design, energy efficiency, water efficiency resource efficiency, and environmental quality. These green building standard codes are mandatory statewide and are applicable to residential and non-residential developments. The most recent CALGreen Code (2019 California Building Standard Code) was effective as of January 1, 2020.

The California Building Energy Efficiency Standards (California Energy Code) is under Title 24, Part 6 and is overseen by the California Energy Commission (CEC). This code includes design requirements to conserve energy in new residential and non-residential developments, while being cost effective for homeowners. This Energy Code is enforced and verified by cities during the planning and building permit process. The current energy efficiency standards (2019 Energy Code) replaced the 2016 Energy Code as of January 1,2020. Under the 2019 standards, single-family homes are predicted to be 53 percent more efficient than homes built under the 2016 standard due more stringent energy-efficiency standards and mandatory installation of solar photovoltaic systems. For nonresidential developments, it is predicted that these buildings will use 30 percent less energy due to lightening upgrades.[31]

CEC studies have identified the most aggressive electrification scenario as putting the building sector on track to reach the carbon neutrality goal by 2045.[32] Installing new natural gas infrastructure in new buildings will interfere with this goal. To meet the State's goal, communities have been adopting "Reach" codes that prohibit natural gas connections in new and remodeled buildings.

Requirements for electric vehicle (EV) charging infrastructure are set forth in Title 24 of the California Code of Regulations and are regularly updated on a 3-year cycle. The CALGreen standards consist of a set of mandatory standards required for new development, as well as two

[30] See: https://www.dgs.ca.gov/BSC/Resources/Page-Content/Building-Standards-Commission-Resources-List-Folder/CALGreen#:~:text=CALGreen%20is%20the%20first%2Din,to%201990%20levels%20by%202020.
[31] See: https://www.energy.ca.gov/sites/default/files/2020-03/Title_24_2019_Building_Standards_FAQ_ada.pdf
[32] California Energy Commission. 2021. F*inal Commission Report: California Building Decarbonization Assessment. Publication Number CEC-400-2021-006-CMF*.August

more voluntary standards known as Tier 1 and Tier 2. The CalGreen standards have recently been updated (2022 version) to require deployment of additional EV chargers in various building types, including multifamily residential and nonresidential land uses. They include requirements for both EV capable parking spaces and the installation of Level 2 EV supply equipment for multifamily residential and nonresidential buildings. The 2022 CALGreen standards include requirements for both EV readiness and the actual installation of EV chargers. The 2022 CALGreen standards include both mandatory requirements and more aggressive voluntary Tier 1 and Tier 2 provisions. Providing EV charging infrastructure that meets current CALGreen requirements will not be sufficient to power the anticipated more extensive level of EV penetration in the future that is needed to meet SB 30 climate goals.

SB 743 Transportation Impacts

Senate Bill 743 required lead agencies to abandon the old "level of service" metric for evaluating a project's transportation impacts, which was based solely on the amount of delay experienced by motor vehicles. In response, the Governor's Office of Planning and Research (OPR) developed a VMT metric that considered other factors such as reducing GHG emissions and developing multimodal transportation[33]. A VMT-per-capita metric was adopted into the CEQA Guidelines Section 15064.3 in November 2017. Given current baseline per-capita VMT levels computed by CARB in the 2030 Scoping Plan of 22.24 miles per day for light-duty vehicles and 24.61 miles per day for all vehicle types, the reductions needed to achieve the 2050 climate goal are 16.8 percent for light-duty vehicles and 14.3 percent for all vehicle types combined. Based on this analysis (as well as other factors), OPR recommended using a 15-percent reduction in per capita VMT as an appropriate threshold of significance for evaluating transportation impacts.

Advanced Clean Cars

The Advanced Clean Cars Program, originally adopted by CARB in 2012, was designed to bring together CARB's traditional passenger vehicle requirements to meet federal air quality standards and also support California's AB 32 goals to develop and implement programs to reduce GHG emissions back down to 1990 levels by 2020, a goal achieved in 2016 as a result of numerous emissions reduction programs.

This recent rule, *Advanced Clean Cars II (ACC II)* is phase two of the original rule. ACC II establishes a year-by-year process, starting in 2026, so all new cars and light trucks sold in California will be zero-emission vehicles by 2035, including plug-in hybrid electric vehicles. The regulation codifies the light-duty vehicle goals set out in Governor Newsom's Executive Order N-79-20. Currently, 16 percent of new light-duty vehicles sold in California are zero emissions or plug-in hybrids. By 2030, 68 percent of new vehicles sold in California would be zero emissions and 100 percent by 2035.

[33] Governor's Office of Planning and Research. 2018. *Technical Advisory on Evaluating Transportation Impacts in CEQA*. December.

City of Pinole General Plan Update

The Pinole General Plan Update[34] outlines the long-range policy framework to guide decision-making related to sustainability and stewardship, community tapestry, and fiscal responsibly and economic health. The Health and Safety Element and Sustainability Element includes goals, policies and actions focused on improving air quality and reducing GHG emissions. The following goals, policies, and actions are applicable to the proposed project:

POLICY HS.6.2	Reduce greenhouse gas emissions.
GOAL SE.3	The City will reduce its contribution to climate change and mitigate and adapt to the effects of climate change as appropriate.
POLICY SE.3.1	Reduce greenhouse gas emissions from City operations and community sources by a minimum of 15 percent below current or baseline levels by the year 2020.
ACTION SE.3.1.1	Complete the in-progress Greenhouse Gas Emissions Inventory for Government Operations and the community (or Planning Area) consistent with State or other accepted protocol. The Inventory shall provide a business-as-usual forecast for GHG emissions for 2020 and 2030.
ACTION SE.3.1.2	Within 12 months of completion of a baseline GHG Inventory, initiate development of a Climate Action Plan that identifies how the City will achieve its 15% reduction target by 2020, at a minimum.
POLICY SE.3.4	Reduce GHG emissions by reducing vehicle miles traveled and by increasing or encouraging the use of alternative fuels and transportation technologies.
GOAL SE.4	Optimize energy efficiency and renewable energy.

The city is currently in the process of adopting a Climate Action and Adaptation Plan (CAAP) with expected adoption to be in mid-2023.[35] The goal of the CAAP is to target a 40% reduction below 1990 levels by 2030, which would put the City on the path to achieve carbon neutrality before 2045. Therefore, once adopted, the City's CAAP will be considered a qualified GHG reduction strategy that meets the State CWQA Guidelines Section 15183.5. Since the plan has not been adopted yet, the BAAQMD's CEQA Air Quality Guideline's thresholds are used.

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[34] City of Pinole, *Pinole General Plan Update*, November 2010. Web: https://p1cdn4static.civiclive.com/UserFiles/Servers/Server_10946972/File/City%20Government/Planning/General%20Plan/City_of_Pinole_2010_General_Plan%20with%202015-2023%20Housing%20Element%20Update.pdf

[35] City of Pinole, 2018. *Climate Action and Adaptation Plan*. January 2023. Web: https://www.ci.pinole.ca.us/city_government/public_works/sustainability/climate_action_and_adaptation_plan

BAAQMD GHG Significance Thresholds

On April 20, 2022, BAAQMD adopted new thresholds of significance for operational GHG emissions from land use projects for projects beginning the CEQA process. The following framework is how BAAQMD will determine GHG significance moving forward.[36] Note BAAQMD intends that the thresholds apply to projects that begin the CEQA process after adoption of the thresholds, unless otherwise directed by the lead agency. The new thresholds of significance are:

A. Projects must include, at a minimum, the following project design elements:
   a. Buildings
      i. The project will not include natural gas appliances or natural gas plumbing (in both residential and non-residential development).
      ii. The project will not result in any wasteful, inefficient, or unnecessary energy usage as determined by the analysis required under CEQA Section 21100(b)(3) and Section 15126.2(b) of the State CEQA Guidelines.
   b. Transportation
      i. Achieve a reduction in project-generated vehicle miles traveled (VMT) below the regional average consistent with the current version of the California Climate Change Scoping Plan (currently 15 percent) or meet a locally adopted Senate Bill 743 VMT target, reflecting the recommendations provided in the Governor's Office of Planning and Research's Technical Advisory on Evaluating Transportation Impacts in CEQA:
         1. Residential Projects: 15 percent below the existing VMT per capita
         2. Office Projects: 15 percent below the existing VMT per employee
         3. Retail Projects: no net increase in existing VMT
      ii. Achieve compliance with off-street electric vehicle requirements in the most recently adopted version of CALGreen Tier 2.

B. Be consistent with a local GHG reduction strategy that meets the criteria under State CEQA Guidelines Section 15183.5(b).

Any new land use project would have to include either section A or B from the above list, not both, to be considered in compliance with BAAQMD's GHG thresholds of significance.

Impact GHG-1: The project would generate greenhouse gas emissions, either directly or indirectly, that would have a less than significant impact on the environment.

GHG emissions associated with development of the proposed project would occur over the short-term from construction activities, consisting primarily of emissions from equipment exhaust and worker and vendor trips. There would also be long-term operational emissions associated with vehicular traffic within the project vicinity, energy and water usage, and solid waste disposal.

[36] Justification Report: BAAQMD CEQA Thresholds for Evaluating the Significance of Climate Impacts from Land Use Project and Plans. Web: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa-thresholds-2022/justification-report-pdf.pdf?la=en

Emissions for the proposed project are discussed below and were analyzed using the methodology recommended in the BAAQMD CEQA Air Quality Guidelines.

CalEEMod Modeling

CalEEMod was used to predict GHG emissions from operation of the site assuming full build-out of the project. The project land use types and size and other project-specific information were input to the model, as described above within the construction period emissions. CalEEMod output is included in *Attachment 1*.

Construction GHG Emissions

GHG emissions associated with construction were computed at 304 MT of CO_2e for the total construction period. These are the emissions from on-site operation of construction equipment, vendor and hauling truck trips, and worker trips. Neither the City nor BAAQMD have an adopted threshold of significance for construction-related GHG emissions, though BAAQMD recommends quantifying emissions and disclosing that GHG emissions would occur during construction. Pursuant to AQ-1 above, project will incorporate BAAQMD best management practices to reduce GHG emissions during construction, and therefore impacts will be less than significant.

Operational GHG Emissions

The CalEEMod model, along with the project vehicle trip generation rates, were used to estimate daily emissions associated with operation of the fully-developed site under the proposed project. As shown in Table 8 for informational purposes only, annual GHG emissions resulting from operation of the proposed project are predicted to be 2,804 MT of CO_2e in 2024.

Table 8. Annual Project GHG Emissions (CO_2e) in Metric Tons

Source Category	Proposed Project in 2024
Area	0
Energy Consumption	68
Mobile	1,371
Mobile – Truck Trips	1,273
Solid Waste Generation	56
Water Usage	36
Total (MT CO_{2e}/year)	2,804

Condition of Approval: None.

Impact GHG-2: Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The proposed building would be constructed in conformance with CALGreen and the Title 24 Building Code, which requires high-efficiency water fixtures, water-efficient irrigation systems, and compliance with current energy efficacy standards. To avoid interference with statewide

GHG reduction measures identified in CARB's Scoping Plan and SB 100 goals, the project includes the following:

1. The project is all-electric and no natural gas will be used.
    - Conforms – the project will be all electric.
2. Avoid wasteful or inefficient use of electricity,
    - Conforms – would meet CALGreen Building Standards Code requirements that are considered to be energy efficient.
3. Include electric vehicle charging infrastructure that meets current Building Code CALGreen Tier 2 compliance, and
    - Does not conform – project includes 15 EV spaces. To comply with the CALGreen Tier 2 requirements, 19 EV spaces and 57 EV capable spaces would need to be provided[37].
4. Reduce VMT per service population by 15 percent over regional average.
    - Conforms – the project's VMT per worker is computed to be 12.8, 18% below the region-wide average of 15.6.[38]

Assuming that the project will be modified to account for the number of EV parking spaces required by CALGreen Tier 2, the GHG-1 and GHG-2 impacts from the proposed project would be considered less than significant.

Conditions of Approval: None.

[37] 2022 California Green Building Standards Code, Title 24, Part 11 (CALGreen), Table A5.106.5.3.2.
[38] Fehr & Peers Pinole Shores Project – VMT Analysis and Trip Generation, File: Pinole_Shores_VMT_Trip_Gen_20221021 (OE 10.26.22).pdf

Supporting Documentation

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

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

Attachment 3 includes the EMFAC2021 emissions modeling to support CalEEMod modeling.

Attachment 4 is the health risk assessment. This includes the summary of the dispersion modeling and the cancer risk calculations for construction and operation. The AERMOD dispersion modeling files for this assessment, which are quite voluminous, are available upon request and would be provided in digital format.

Attachment 5 includes the cumulative health risk calculations from existing sources affecting the construction MEI.

Attachment 1: Health Risk Calculation Methodology

A health risk assessment (HRA) for exposure to Toxic Air Contaminates (TACs) requires the application of a risk characterization model to the results from the air dispersion model to estimate potential health risk at each sensitive receptor location. The State of California Office of Environmental Health Hazard Assessment (OEHHA) and California Air Resources Board (CARB) develop recommended methods for conducting health risk assessments. The most recent OEHHA risk assessment guidelines were published in February of 2015.[39] These guidelines incorporate substantial changes designed to provide for enhanced protection of children, as required by State law, compared to previous published risk assessment guidelines. CARB has provided additional guidance on implementing OEHHA's recommended methods.[40] This HRA used the 2015 OEHHA risk assessment guidelines and CARB guidance. The BAAQMD has adopted recommended procedures for applying the newest OEHHA guidelines as part of Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants.[41] Exposure parameters from the OEHHA guidelines and the recent BAAQMD HRA Guidelines were used in this evaluation.

Cancer Risk

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

The current OEHHA guidance recommends that cancer risk be calculated by age groups to account for different breathing rates and sensitivity to TACs. Specifically, they recommend evaluating risks for the third trimester of pregnancy to age zero, ages zero to less than two (infant exposure), ages two to less than 16 (child exposure), and ages 16 to 70 (adult exposure). Age sensitivity factors (ASFs) associated with the different types of exposure are an ASF of 10 for the third trimester and infant exposures, an ASF of 3 for a child exposure, and an ASF of 1 for an adult exposure. Also associated with each exposure type are different breathing rates, expressed as liters per kilogram of body weight per day (L/kg-day) or liters per kilogram of body weight per 8-hour period for the case of worker or school child exposures. As recommended by the BAAQMD for residential exposures, 95th percentile breathing rates are used for the third trimester and infant exposures, and 80th percentile breathing rates for child and adult exposures. For children at schools and daycare facilities, BAAQMD recommends using the 95th percentile 8-hour breathing rates. Additionally, CARB and the BAAQMD recommend the use of a residential exposure duration of

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[39] OEHHA, 2015. *Air Toxics Hot Spots Program Risk Assessment Guidelines, The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. Office of Environmental Health Hazard Assessment. February.

[40] CARB, 2015. *Risk Management Guidance for Stationary Sources of Air Toxics*. July 23.

[41] BAAQMD, 2016. *BAAQMD Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines*. December 2016.

30 years for sources with long-term emissions (e.g., roadways). For workers, assumed to be adults, a 25-year exposure period is recommended by the BAAQMD. For school children a 9-year exposure period is recommended by the BAAQMD.

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

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

Cancer Risk (per million) = *CPF x Inhalation Dose x ASF x ED/AT x FAH x* 10^6

Where:

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

Inhalation Dose = C_{air} *x DBR* x A x (EF/365) x* 10^{-6}

Where:

C_{air} = concentration in air ($\mu g/m^3$)
DBR = daily breathing rate (L/kg body weight-day)
8HrBR = 8-hour breathing rate (L/kg body weight-8 hours)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

* An 8-hour breathing rate (8HrBR) is used for worker and school child exposures.

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

Exposure Type →	**Infant**		**Child**	**Adult**
Parameter ***Age Range →***	**3rd Trimester**	**0<2**	**2 < 16**	**16 - 30**
DPM CPF $(mg/kg\text{-}day)^{-1}$	1.10E+00	1.10E+00	1.10E+00	1.10E+00
Vehicle TOG Exhaust CPF $(mg/kg\text{-}day)^{-1}$	6.28E-03	6.28E-03	6.28E-03	6.28E-03
Vehicle TOG Evaporative CPF $(mg/kg\text{-}day)^{-1}$	3.70E-04	3.70E-04	3.70E-04	3.70E-04
Daily Breathing Rate (L/kg-day) 95th Percentile Rate	361	1,090	745	335
8-hour Breathing Rate (L/kg-8 hours) 95th Percentile Rate	-	1,200	520	240
Inhalation Absorption Factor	1	1	1	1
Averaging Time (years)	70	70	70	70
Exposure Duration (years)	0.25	2	14	14*
Exposure Frequency (days/year)	350	350	350	350*
Age Sensitivity Factor	10	10	3	1
Fraction of Time at Home (FAH)	0.85-1.0	0.85-1.0	0.72-1.0	0.73*
* An 8-hour breathing rate (8HrBR) is used for worker and school child exposures.				

Non-Cancer Hazards

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

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

Annual $PM_{2.5}$ Concentrations

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

Attachment 2: CalEEMod Modeling Inputs and Outputs

Air Quality/Noise Construction Information Data Request

Project Name: Pinole Shores

Complete ALL Portions in Yellow

See Equipment Type TAB for type, horsepower and load factor

Project Size

- ____________ Dwelling Units ____7.37 total project acres disturbed
- ____________ s.f. residential
- ____________ s.f. retail
- ____________ s.f. office/commercial
- ____117,943 s.f. other, specify: Unrefrigerated Warehouse- No Rail
- ____________ s.f. parking garage ____________ spaces
- ____________ s.f. parking lot ____________147 spaces

Construction Days (i.e, M-F) M-F to M-F

Construction Hours 7:00 am to 7:00 pm

Pile Driving? Y/N? N

Project include on-site GENERATOR OR FIRE PUMP during project OPERATION

IF YES (if BOTH separate values) -->

Kilowatts/Horsepower: __________

Fuel Type: _____________

Location in project (Plans Desired if Available):

DO NOT MULTIPLY EQUIPMENT HOURS/DAY BY THE QUANTITY OF EQUIPMENT

Quantity	Description	HP	Load Factor	Hours/day	Total Work Days	Avg. Hours per day	HP Annual Hours	Comments
	Demolition	Start Date:		Total phase:	0			**Overall Import/Export Volumes**
		End Date:						
0	Concrete/Industrial Saws	81	0	8	0	8	0	**Demolition Volume**
0	Excavators	158	0.38	8	0	8	0	Square footage of buildings to be demolished - Site is vacant - No Demolition
0	Rubber-Tired Dozers	247	0.4	8	0	8	0	(*or* total tons to be hauled)
0	Tractors/Loaders/Backhoes	97	0.37	8	0	8	0	0 square feet *or*
	Other Equipment?							0 Hauling volume (tons)
								Any pavement demolished and hauled? 0 tons
	Site Preparation	Start Date:	4/3/2023	Total phase:	5			
		End Date:	4/7/2023					
2	Graders	187	0.41	8	5	8	6134	
2	Rubber Tired Dozers	247	0.4	8	5	8	7904	
2	Tractors/Loaders/Backhoes	97	0.37	8	5	8	2871	
	Other Equipment?							
	Grading / Excavation	Start Date:	4/10/2023	Total phase:	10			
		End Date:	4/21/2023					**Soil Hauling Volume**
1	Excavators	158	0.38	8	10	8	4803	Export volume = 0 cubic yards? Balanced Site
1	Graders	187	0.41	8	10	8	6134	Import volume = 0 cubic yards? Balanced Site
1	Rubber Tired Dozers	247	0.4	8	10	8	7904	
0	Concrete/Industrial Saws	81	0.73	0	0	0	0	
2	Tractors/Loaders/Backhoes	97	0.37	8	10	8	5742	
	Other Equipment?							
	Trenching/Foundation	Start Date:	4/24/2023	Total phase:	20			
		End Date:	5/19/2023					
1	Tractor/Loader/Backhoe	97	0.37	8	20	8	5742	
1	Excavators	158	0.38	8	20	8	9606	
	Other Equipment?							
	Building - Exterior	Start Date:	5/22/2023	Total phase:	150			Cement Trucks? 10 Total Round-Trips
		End Date:	12/15/2023					
1	Cranes	231	0.29	8	150	8	80388	Electric? (Y/N) Otherwise assumed diesel
2	Forklifts	89	0.2	8	150	8	42720	Liquid Propane (LPG)? (Y/N) Otherwise Assumed diesel
1	Generator Sets	84	0.74	8	150	8	74592	Or temporary line power? (Y/N) Y
2	Tractors/Loaders/Backhoes	97	0.37	8	150	8	86136	
1	Welders	46	0.45	8	150	8	24840	
	Other Equipment?							
Building - Interior/Architectural Coating		Start Date:	8/22/2023	Total phase:	30			
		End Date:	10/2/2023					
1	Air Compressors	78	0.48	8	30	8	8986	
0	Aerial Lift	62	0.31	0	0	0	0	
	Other Equipment?							
	Paving	Start Date:	8/22/2023	Total phase:	30			
		Start Date:	10/2/2023					
2	Cement and Mortar Mixers	9	0.56	6	30	6	1814	
1	Pavers	130	0.42	8	30	8	13104	Asphalt? ___ cubic yards or __55_ round trips? n project needs
1	Paving Equipment	132	0.36	6	30	6	8554	
2	Rollers	80	0.38	6	30	6	10944	
1	Tractors/Loaders/Backhoes	97	0.37	8	30	8	8614	
	Other Equipment?							
	Additional Phases	Start Date:		Total phase:				
		Start Date:						
						#DIV/0!	0	
						#DIV/0!	0	
						#DIV/0!	0	
						#DIV/0!	0	
						#DIV/0!	0	

Equipment types listed in "Equipment Types" worksheet tab.

Equipment listed in this sheet is to provide an example of inputs

Complete one sheet for each project component

It is assumed that water trucks would be used during grading

Add or subtract phases and equipment, as appropriate

Modify horsepower or load factor, as appropriate

Construction Criteria Air Pollutants							
Unmitigated	ROG	NOX	PM10 Exhaust	PM2.5 Exhaust	PM2.5 Fugitive	**CO2e**	
Year	Tons					MT	
Construction Equipment							
2023	0.77	1.29	0.06	0.06	0.03	209.59	
EMFAC							
2023	0.02	0.10	0.01	0.003	0.01	94.16	
Total Construction Emissions by Year							
2023	0.79	1.39	0.07	0.06		303.75	
	Total Construction Emissions						
Tons	0.79	1.39	0.07	0.06		303.75	
Pounds/Workdays	*Average Daily Emissions*					Workdays	
2023	8.53	15.02	0.73	0.65			**185**
Threshold - lbs/day	**54.0**	**54.0**	**82.0**	**54.0**			
	Total Construction Emissions						
Pounds	8.53	15.02	0.73	0.65		0.00	
Average	8.53	15.02	0.73	0.65		0.00	185.00
Threshold - lbs/day	**54.0**	**54.0**	**82.0**	**54.0**			

Operational Criteria Air Pollutants				
Unmitigated	ROG	NOX	Total PM10	Total PM2.5
Year	Tons			
Project Operation	1.49	0.78	1.31	0.33
Truck Delivery Trips	0.03	1.79	0.36	0.09
Total	1.52	2.57	1.67	0.42
	Net Annual Operational Emissions			
Tons/year	1.52	2.57	1.67	0.42
Threshold - Tons/year	**10.0**	**10.0**	**15.0**	**10.0**
	Average Daily Emissions			
Pounds Per Day	8.32	14.08	9.13	2.31
Threshold - lbs/day	**54.0**	**54.0**	**82.0**	**54.0**

Category	**CO2e**			
	Project	Existing	Project 2030	Existing
Area	0.01			
Energy	67.78			
Mobile	1371.19			
Mobile - Truck Trips	1272.88			
Waste	55.75			
Water	36.28			
TOTAL	2803.89	0.00	0.00	0.00
Net GHG Emissions		2803.89		0.00

Traffic Consultant Trip Gen					CalEEMod Default		
Land Use	**Size**	**Daily Trips**	**New Trips**	**Weekday Trip Gen**	**Weekday**	**Sat**	**Sun**
Unrefrigerated WareHouse ksf	117.9	1,310	1310	***11.11***	1.74	1.74	1.74
					Rev	***11.11***	***11.11***

Table 2: Project Automobile Trip Generation

Land Use	Size[1]	Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
			In	Out	Total	In	Out	Total
R&D[2]	117.9 KSF	1,310	99	22	121	18	98	116

Notes:

1. KSF = 1,000 square feet.
2. ITE *Trip Generation Manual, Eleventh Edition* land use category 760 (Research and Development Center) in General Urban/Suburban Setting;

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1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	117.94	1000sqft	7.37	117,943.00	0
Parking Lot	147.00	Space	0.00	58,800.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	5			**Operational Year**	2024
Utility Company	MCE				
CO2 Intensity (lb/MWhr)	289.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Total lot acreage from provided trip gen, total number of parking spaces from returned project needs sheet, total number of warehouse square footage from provided project plans, default parking lot square footage used.

Construction Phase - Provided by project applicant in construction worksheet.

Off-road Equipment - Provided by construction worksheet from project applicant.

Off-road Equipment - Provided by construction worksheet from project applicant.

Off-road Equipment - Provided by construction worksheet from project applicant.

Off-road Equipment - Provided by construction worksheet from project applicant.

Off-road Equipment - Provided by construction worksheet from project applicant.

Off-road Equipment - Provided by construction worksheet from project applicant.

Grading - Balanced site, no soil import/export.

Demolition - No demo

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Trips and VMT - EMFAC2021 adjustment 0 trips

Vehicle Trips - Provided trip gen.

Vehicle Emission Factors - EMFAC2021 vehicle emission factors Contra Costa County 2024.

Vehicle Emission Factors -

Vehicle Emission Factors -

Fleet Mix - EMFAC2021 fleet mix Contra Costa County 2024.

Energy Use - All electric according to project applicant - convert natural gas.

Water And Wastewater - 100% aerobic - no septic tanks or lagoons.

Construction Off-road Equipment Mitigation - BMPs, tier 4 interim mitiagion.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim

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tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	10.00	5.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	230.00	150.00
tblConstructionPhase	NumDays	20.00	30.00
tblConstructionPhase	NumDays	20.00	30.00
tblConstructionPhase	PhaseEndDate	5/12/2023	4/7/2023
tblConstructionPhase	PhaseEndDate	6/9/2023	4/21/2023
tblConstructionPhase	PhaseEndDate	4/26/2024	12/15/2023
tblConstructionPhase	PhaseEndDate	5/24/2024	10/2/2023
tblConstructionPhase	PhaseEndDate	6/21/2024	10/2/2023
tblConstructionPhase	PhaseStartDate	4/29/2023	4/3/2023
tblConstructionPhase	PhaseStartDate	5/13/2023	4/10/2023
tblConstructionPhase	PhaseStartDate	6/10/2023	5/22/2023
tblConstructionPhase	PhaseStartDate	4/27/2024	8/22/2023
tblConstructionPhase	PhaseStartDate	5/25/2024	8/22/2023
tblEnergyUse	NT24E	1.38	1.44
tblEnergyUse	NT24NG	0.21	0.00
tblEnergyUse	T24E	0.21	0.55
tblEnergyUse	T24NG	1.17	0.00
tblFleetMix	HHD	7.1350e-003	7.7050e-003
tblFleetMix	HHD	7.1350e-003	7.7050e-003

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tblFleetMix	LDA	0.56	0.51
tblFleetMix	LDA	0.56	0.51
tblFleetMix	LDT1	0.06	0.05
tblFleetMix	LDT1	0.06	0.05
tblFleetMix	LDT2	0.18	0.22
tblFleetMix	LDT2	0.18	0.22
tblFleetMix	LHD1	0.02	0.03
tblFleetMix	LHD1	0.02	0.03
tblFleetMix	LHD2	5.5010e-003	6.6010e-003
tblFleetMix	LHD2	5.5010e-003	6.6010e-003
tblFleetMix	MCY	0.03	0.02
tblFleetMix	MCY	0.03	0.02
tblFleetMix	MDV	0.13	0.14
tblFleetMix	MDV	0.13	0.14
tblFleetMix	MH	3.3720e-003	3.5070e-003
tblFleetMix	MH	3.3720e-003	3.5070e-003
tblFleetMix	MHD	7.1310e-003	8.7360e-003
tblFleetMix	MHD	7.1310e-003	8.7360e-003
tblFleetMix	OBUS	5.4600e-004	5.3200e-004
tblFleetMix	OBUS	5.4600e-004	5.3200e-004
tblFleetMix	SBUS	1.3110e-003	7.2600e-004
tblFleetMix	SBUS	1.3110e-003	7.2600e-004
tblFleetMix	UBUS	3.3700e-004	4.8100e-004
tblFleetMix	UBUS	3.3700e-004	4.8100e-004
tblLandUse	LotAcreage	2.71	7.37
tblLandUse	LotAcreage	1.32	0.00
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Excavators

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tblOffRoadEquipment	OffRoadEquipmentType		Cement and Mortar Mixers
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblTripsAndVMT	VendorTripNumber	29.00	0.00
tblTripsAndVMT	WorkerTripNumber	5.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	0.00
tblTripsAndVMT	WorkerTripNumber	13.00	0.00
tblTripsAndVMT	WorkerTripNumber	74.00	0.00
tblTripsAndVMT	WorkerTripNumber	18.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	0.00
tblVehicleEF	HHD	0.02	0.23
tblVehicleEF	HHD	0.05	0.12
tblVehicleEF	HHD	6.28	5.19
tblVehicleEF	HHD	0.40	0.78
tblVehicleEF	HHD	5.3450e-003	5.3500e-004
tblVehicleEF	HHD	1,038.94	834.77
tblVehicleEF	HHD	1,408.45	1,615.14
tblVehicleEF	HHD	0.04	0.01

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tblVehicleEF	HHD	0.16	0.13
tblVehicleEF	HHD	0.22	0.26
tblVehicleEF	HHD	1.1000e-005	7.0000e-006
tblVehicleEF	HHD	5.34	4.10
tblVehicleEF	HHD	2.66	1.88
tblVehicleEF	HHD	2.36	2.71
tblVehicleEF	HHD	2.6090e-003	2.3030e-003
tblVehicleEF	HHD	0.06	0.08
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	1.0000e-006	0.00
tblVehicleEF	HHD	2.4960e-003	2.1980e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8670e-003	8.7970e-003
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	1.0000e-006	0.00
tblVehicleEF	HHD	2.0000e-006	9.3000e-005
tblVehicleEF	HHD	9.5000e-005	2.8000e-005
tblVehicleEF	HHD	0.42	0.33
tblVehicleEF	HHD	1.0000e-006	0.00
tblVehicleEF	HHD	0.03	0.02
tblVehicleEF	HHD	4.5000e-005	2.5300e-004
tblVehicleEF	HHD	2.0000e-006	0.00
tblVehicleEF	HHD	9.6700e-003	7.3160e-003
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	2.0000e-006	9.3000e-005
tblVehicleEF	HHD	9.5000e-005	2.8000e-005
tblVehicleEF	HHD	0.49	0.59
tblVehicleEF	HHD	1.0000e-006	0.00

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tblVehicleEF	HHD	0.07	0.14
tblVehicleEF	HHD	4.5000e-005	2.5300e-004
tblVehicleEF	HHD	2.0000e-006	0.00
tblVehicleEF	LDA	1.7780e-003	2.1140e-003
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.52	0.66
tblVehicleEF	LDA	2.15	3.15
tblVehicleEF	LDA	239.59	255.06
tblVehicleEF	LDA	50.81	66.40
tblVehicleEF	LDA	4.0970e-003	4.3890e-003
tblVehicleEF	LDA	0.02	0.03
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.17	0.25
tblVehicleEF	LDA	0.04	7.0680e-003
tblVehicleEF	LDA	1.3280e-003	1.2120e-003
tblVehicleEF	LDA	1.7250e-003	2.0070e-003
tblVehicleEF	LDA	0.02	2.4740e-003
tblVehicleEF	LDA	1.2230e-003	1.1160e-003
tblVehicleEF	LDA	1.5860e-003	1.8460e-003
tblVehicleEF	LDA	0.04	0.31
tblVehicleEF	LDA	0.09	0.09
tblVehicleEF	LDA	0.04	0.00
tblVehicleEF	LDA	6.6340e-003	8.1180e-003
tblVehicleEF	LDA	0.03	0.23
tblVehicleEF	LDA	0.21	0.32
tblVehicleEF	LDA	2.3700e-003	2.5210e-003
tblVehicleEF	LDA	5.0300e-004	6.5600e-004
tblVehicleEF	LDA	0.04	0.31
tblVehicleEF	LDA	0.09	0.09

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tblVehicleEF	LDA	0.04	0.00
tblVehicleEF	LDA	9.6420e-003	0.01
tblVehicleEF	LDA	0.03	0.23
tblVehicleEF	LDA	0.23	0.35
tblVehicleEF	LDT1	3.8250e-003	6.0630e-003
tblVehicleEF	LDT1	0.06	0.11
tblVehicleEF	LDT1	0.87	1.37
tblVehicleEF	LDT1	2.34	5.70
tblVehicleEF	LDT1	287.73	329.05
tblVehicleEF	LDT1	61.75	87.88
tblVehicleEF	LDT1	6.1430e-003	9.4520e-003
tblVehicleEF	LDT1	0.03	0.04
tblVehicleEF	LDT1	0.07	0.13
tblVehicleEF	LDT1	0.24	0.41
tblVehicleEF	LDT1	0.04	8.9030e-003
tblVehicleEF	LDT1	1.6540e-003	1.8800e-003
tblVehicleEF	LDT1	2.2020e-003	3.0490e-003
tblVehicleEF	LDT1	0.02	3.1160e-003
tblVehicleEF	LDT1	1.5220e-003	1.7300e-003
tblVehicleEF	LDT1	2.0240e-003	2.8040e-003
tblVehicleEF	LDT1	0.09	0.66
tblVehicleEF	LDT1	0.18	0.18
tblVehicleEF	LDT1	0.08	0.00
tblVehicleEF	LDT1	0.02	0.03
tblVehicleEF	LDT1	0.08	0.53
tblVehicleEF	LDT1	0.32	0.59
tblVehicleEF	LDT1	2.8470e-003	3.2530e-003
tblVehicleEF	LDT1	6.1100e-004	8.6900e-004
tblVehicleEF	LDT1	0.09	0.66

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tblVehicleEF	LDT1	0.18	0.18
tblVehicleEF	LDT1	0.08	0.00
tblVehicleEF	LDT1	0.02	0.04
tblVehicleEF	LDT1	0.08	0.53
tblVehicleEF	LDT1	0.35	0.65
tblVehicleEF	LDT2	2.8540e-003	2.7270e-003
tblVehicleEF	LDT2	0.06	0.08
tblVehicleEF	LDT2	0.70	0.80
tblVehicleEF	LDT2	2.74	3.72
tblVehicleEF	LDT2	307.00	339.02
tblVehicleEF	LDT2	66.18	87.08
tblVehicleEF	LDT2	5.6560e-003	6.0050e-003
tblVehicleEF	LDT2	0.03	0.04
tblVehicleEF	LDT2	0.06	0.07
tblVehicleEF	LDT2	0.26	0.34
tblVehicleEF	LDT2	0.04	8.5320e-003
tblVehicleEF	LDT2	1.3430e-003	1.3280e-003
tblVehicleEF	LDT2	1.6990e-003	2.1140e-003
tblVehicleEF	LDT2	0.02	2.9860e-003
tblVehicleEF	LDT2	1.2360e-003	1.2220e-003
tblVehicleEF	LDT2	1.5620e-003	1.9430e-003
tblVehicleEF	LDT2	0.06	0.30
tblVehicleEF	LDT2	0.12	0.08
tblVehicleEF	LDT2	0.06	0.00
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.05	0.22
tblVehicleEF	LDT2	0.29	0.39
tblVehicleEF	LDT2	3.0370e-003	3.3510e-003
tblVehicleEF	LDT2	6.5500e-004	8.6100e-004

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tblVehicleEF	LDT2	0.06	0.30
tblVehicleEF	LDT2	0.12	0.08
tblVehicleEF	LDT2	0.06	0.00
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.05	0.22
tblVehicleEF	LDT2	0.32	0.43
tblVehicleEF	LHD1	4.7680e-003	5.0910e-003
tblVehicleEF	LHD1	8.4040e-003	8.5720e-003
tblVehicleEF	LHD1	0.01	0.02
tblVehicleEF	LHD1	0.18	0.19
tblVehicleEF	LHD1	0.77	0.88
tblVehicleEF	LHD1	0.99	1.96
tblVehicleEF	LHD1	9.11	8.97
tblVehicleEF	LHD1	776.98	781.17
tblVehicleEF	LHD1	10.85	16.45
tblVehicleEF	LHD1	8.2100e-004	7.3800e-004
tblVehicleEF	LHD1	0.05	0.05
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	0.07	0.06
tblVehicleEF	LHD1	0.94	0.88
tblVehicleEF	LHD1	0.30	0.42
tblVehicleEF	LHD1	9.2700e-004	8.0400e-004
tblVehicleEF	LHD1	0.08	0.08
tblVehicleEF	LHD1	9.9010e-003	9.6150e-003
tblVehicleEF	LHD1	0.01	0.02
tblVehicleEF	LHD1	2.3100e-004	2.0500e-004
tblVehicleEF	LHD1	8.8700e-004	7.7000e-004
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	2.4750e-003	2.4040e-003

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tblVehicleEF	LHD1	0.01	0.02
tblVehicleEF	LHD1	2.1200e-004	1.8800e-004
tblVehicleEF	LHD1	1.7720e-003	0.12
tblVehicleEF	LHD1	0.07	0.03
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.0150e-003	0.00
tblVehicleEF	LHD1	0.10	0.10
tblVehicleEF	LHD1	0.20	0.17
tblVehicleEF	LHD1	0.07	0.11
tblVehicleEF	LHD1	8.8000e-005	8.7000e-005
tblVehicleEF	LHD1	7.5750e-003	7.6170e-003
tblVehicleEF	LHD1	1.0700e-004	1.6300e-004
tblVehicleEF	LHD1	1.7720e-003	0.12
tblVehicleEF	LHD1	0.07	0.03
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	1.0150e-003	0.00
tblVehicleEF	LHD1	0.12	0.13
tblVehicleEF	LHD1	0.20	0.17
tblVehicleEF	LHD1	0.08	0.12
tblVehicleEF	LHD2	2.8920e-003	2.8960e-003
tblVehicleEF	LHD2	6.8660e-003	7.5540e-003
tblVehicleEF	LHD2	7.2760e-003	0.01
tblVehicleEF	LHD2	0.13	0.13
tblVehicleEF	LHD2	0.64	0.59
tblVehicleEF	LHD2	0.55	1.05
tblVehicleEF	LHD2	14.31	14.29
tblVehicleEF	LHD2	754.66	830.46
tblVehicleEF	LHD2	7.04	8.78
tblVehicleEF	LHD2	1.8360e-003	1.8170e-003

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tblVehicleEF	LHD2	0.07	0.09
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	0.11	0.11
tblVehicleEF	LHD2	0.98	1.02
tblVehicleEF	LHD2	0.17	0.22
tblVehicleEF	LHD2	1.4750e-003	1.4510e-003
tblVehicleEF	LHD2	0.09	0.09
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.03
tblVehicleEF	LHD2	1.1100e-004	8.9000e-005
tblVehicleEF	LHD2	1.4110e-003	1.3880e-003
tblVehicleEF	LHD2	0.04	0.03
tblVehicleEF	LHD2	2.7100e-003	2.7040e-003
tblVehicleEF	LHD2	0.02	0.03
tblVehicleEF	LHD2	1.0200e-004	8.2000e-005
tblVehicleEF	LHD2	8.0300e-004	0.06
tblVehicleEF	LHD2	0.03	0.02
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.7900e-004	0.00
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.08	0.08
tblVehicleEF	LHD2	0.04	0.06
tblVehicleEF	LHD2	7.2780e-003	7.9880e-003
tblVehicleEF	LHD2	7.0000e-005	8.7000e-005
tblVehicleEF	LHD2	8.0300e-004	0.06
tblVehicleEF	LHD2	0.03	0.02
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.7900e-004	0.00
tblVehicleEF	LHD2	0.13	0.15

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tblVehicleEF	LHD2	0.08	0.08
tblVehicleEF	LHD2	0.04	0.06
tblVehicleEF	MCY	0.34	0.18
tblVehicleEF	MCY	0.26	0.20
tblVehicleEF	MCY	20.00	14.15
tblVehicleEF	MCY	9.07	8.31
tblVehicleEF	MCY	213.40	190.32
tblVehicleEF	MCY	61.71	51.99
tblVehicleEF	MCY	0.07	0.04
tblVehicleEF	MCY	0.02	8.9630e-003
tblVehicleEF	MCY	1.16	0.62
tblVehicleEF	MCY	0.27	0.15
tblVehicleEF	MCY	0.01	0.01
tblVehicleEF	MCY	2.0280e-003	1.9050e-003
tblVehicleEF	MCY	3.0020e-003	3.5280e-003
tblVehicleEF	MCY	5.0400e-003	4.2000e-003
tblVehicleEF	MCY	1.8960e-003	1.7840e-003
tblVehicleEF	MCY	2.8250e-003	3.3220e-003
tblVehicleEF	MCY	0.89	4.35
tblVehicleEF	MCY	0.75	3.59
tblVehicleEF	MCY	0.56	0.00
tblVehicleEF	MCY	2.29	1.20
tblVehicleEF	MCY	0.56	3.82
tblVehicleEF	MCY	1.98	1.49
tblVehicleEF	MCY	2.1120e-003	1.8810e-003
tblVehicleEF	MCY	6.1100e-004	5.1400e-004
tblVehicleEF	MCY	0.89	0.11
tblVehicleEF	MCY	0.75	3.59
tblVehicleEF	MCY	0.56	0.00

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tblVehicleEF	MCY	2.82	1.42
tblVehicleEF	MCY	0.56	3.82
tblVehicleEF	MCY	2.15	1.62
tblVehicleEF	MDV	3.8250e-003	4.0870e-003
tblVehicleEF	MDV	0.08	0.11
tblVehicleEF	MDV	0.82	0.99
tblVehicleEF	MDV	3.10	4.17
tblVehicleEF	MDV	379.50	414.64
tblVehicleEF	MDV	81.06	105.89
tblVehicleEF	MDV	8.2530e-003	9.1570e-003
tblVehicleEF	MDV	0.03	0.04
tblVehicleEF	MDV	0.08	0.11
tblVehicleEF	MDV	0.32	0.46
tblVehicleEF	MDV	0.04	8.7530e-003
tblVehicleEF	MDV	1.4550e-003	1.4250e-003
tblVehicleEF	MDV	1.7960e-003	2.2030e-003
tblVehicleEF	MDV	0.02	3.0640e-003
tblVehicleEF	MDV	1.3420e-003	1.3140e-003
tblVehicleEF	MDV	1.6510e-003	2.0260e-003
tblVehicleEF	MDV	0.07	0.39
tblVehicleEF	MDV	0.15	0.11
tblVehicleEF	MDV	0.08	0.00
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	0.06	0.30
tblVehicleEF	MDV	0.38	0.54
tblVehicleEF	MDV	3.7510e-003	4.0960e-003
tblVehicleEF	MDV	8.0200e-004	1.0470e-003
tblVehicleEF	MDV	0.07	0.39
tblVehicleEF	MDV	0.15	0.11

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tblVehicleEF	MDV	0.08	0.00
tblVehicleEF	MDV	0.02	0.03
tblVehicleEF	MDV	0.06	0.30
tblVehicleEF	MDV	0.42	0.59
tblVehicleEF	MH	9.3170e-003	0.01
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	0.85	0.98
tblVehicleEF	MH	1.96	2.31
tblVehicleEF	MH	1,512.95	1,673.66
tblVehicleEF	MH	17.73	21.75
tblVehicleEF	MH	0.06	0.07
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.52	1.64
tblVehicleEF	MH	0.24	0.30
tblVehicleEF	MH	0.13	0.04
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.03	0.04
tblVehicleEF	MH	2.3000e-004	2.7000e-004
tblVehicleEF	MH	0.06	0.02
tblVehicleEF	MH	3.2970e-003	3.3150e-003
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	2.1100e-004	2.4800e-004
tblVehicleEF	MH	0.58	30.74
tblVehicleEF	MH	0.05	8.06
tblVehicleEF	MH	0.23	0.00
tblVehicleEF	MH	0.07	0.08
tblVehicleEF	MH	0.01	0.19
tblVehicleEF	MH	0.09	0.11
tblVehicleEF	MH	0.01	0.02

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tblVehicleEF	MH	1.7500e-004	2.1500e-004
tblVehicleEF	MH	0.58	30.74
tblVehicleEF	MH	0.05	8.06
tblVehicleEF	MH	0.23	0.00
tblVehicleEF	MH	0.08	0.10
tblVehicleEF	MH	0.01	0.19
tblVehicleEF	MH	0.10	0.12
tblVehicleEF	MHD	3.9550e-003	0.01
tblVehicleEF	MHD	2.0890e-003	0.01
tblVehicleEF	MHD	0.01	9.4060e-003
tblVehicleEF	MHD	0.43	0.69
tblVehicleEF	MHD	0.27	0.40
tblVehicleEF	MHD	1.19	1.17
tblVehicleEF	MHD	83.97	168.50
tblVehicleEF	MHD	1,109.04	1,228.53
tblVehicleEF	MHD	10.07	8.85
tblVehicleEF	MHD	0.01	0.03
tblVehicleEF	MHD	0.14	0.16
tblVehicleEF	MHD	8.0650e-003	6.1750e-003
tblVehicleEF	MHD	0.52	0.98
tblVehicleEF	MHD	1.47	1.21
tblVehicleEF	MHD	1.66	1.42
tblVehicleEF	MHD	4.7700e-004	2.5040e-003
tblVehicleEF	MHD	0.13	0.05
tblVehicleEF	MHD	7.2110e-003	0.01
tblVehicleEF	MHD	1.2800e-004	1.1400e-004
tblVehicleEF	MHD	4.5600e-004	2.3950e-003
tblVehicleEF	MHD	0.06	0.02
tblVehicleEF	MHD	6.8910e-003	0.01

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tblVehicleEF	MHD	1.1700e-004	1.0500e-004
tblVehicleEF	MHD	4.0400e-004	0.03
tblVehicleEF	MHD	0.02	7.4820e-003
tblVehicleEF	MHD	0.02	0.03
tblVehicleEF	MHD	2.3300e-004	0.00
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	0.02	0.06
tblVehicleEF	MHD	0.05	0.05
tblVehicleEF	MHD	7.9600e-004	1.5660e-003
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	1.0000e-004	8.7000e-005
tblVehicleEF	MHD	4.0400e-004	0.03
tblVehicleEF	MHD	0.02	7.4820e-003
tblVehicleEF	MHD	0.03	0.05
tblVehicleEF	MHD	2.3300e-004	0.00
tblVehicleEF	MHD	0.02	0.06
tblVehicleEF	MHD	0.02	0.06
tblVehicleEF	MHD	0.06	0.06
tblVehicleEF	OBUS	8.8390e-003	8.8760e-003
tblVehicleEF	OBUS	8.9830e-003	0.01
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.50	0.48
tblVehicleEF	OBUS	0.98	1.19
tblVehicleEF	OBUS	2.88	3.28
tblVehicleEF	OBUS	65.66	65.31
tblVehicleEF	OBUS	1,496.19	1,610.85
tblVehicleEF	OBUS	21.75	24.74
tblVehicleEF	OBUS	8.1400e-003	8.1880e-003
tblVehicleEF	OBUS	0.10	0.11

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tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.23	0.25
tblVehicleEF	OBUS	1.13	1.18
tblVehicleEF	OBUS	0.68	0.70
tblVehicleEF	OBUS	7.8000e-005	2.9300e-004
tblVehicleEF	OBUS	0.13	0.05
tblVehicleEF	OBUS	6.0630e-003	0.02
tblVehicleEF	OBUS	2.1000e-004	2.1400e-004
tblVehicleEF	OBUS	7.5000e-005	2.8000e-004
tblVehicleEF	OBUS	0.06	0.02
tblVehicleEF	OBUS	5.7770e-003	0.02
tblVehicleEF	OBUS	1.9300e-004	1.9700e-004
tblVehicleEF	OBUS	1.6890e-003	0.12
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.05	0.05
tblVehicleEF	OBUS	8.2000e-004	0.00
tblVehicleEF	OBUS	0.05	0.09
tblVehicleEF	OBUS	0.09	0.13
tblVehicleEF	OBUS	0.14	0.16
tblVehicleEF	OBUS	6.2700e-004	6.2300e-004
tblVehicleEF	OBUS	0.01	0.02
tblVehicleEF	OBUS	2.1500e-004	2.4500e-004
tblVehicleEF	OBUS	1.6890e-003	0.12
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.06	0.06
tblVehicleEF	OBUS	8.2000e-004	0.00
tblVehicleEF	OBUS	0.07	0.12
tblVehicleEF	OBUS	0.09	0.13
tblVehicleEF	OBUS	0.15	0.17

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tblVehicleEF	SBUS	0.02	0.07
tblVehicleEF	SBUS	2.5810e-003	0.12
tblVehicleEF	SBUS	1.3160e-003	2.8020e-003
tblVehicleEF	SBUS	1.26	1.29
tblVehicleEF	SBUS	0.22	0.65
tblVehicleEF	SBUS	0.19	0.39
tblVehicleEF	SBUS	298.54	181.28
tblVehicleEF	SBUS	987.59	1,039.92
tblVehicleEF	SBUS	1.09	2.41
tblVehicleEF	SBUS	0.05	0.03
tblVehicleEF	SBUS	0.14	0.14
tblVehicleEF	SBUS	1.1600e-003	2.9210e-003
tblVehicleEF	SBUS	2.23	1.22
tblVehicleEF	SBUS	2.75	2.19
tblVehicleEF	SBUS	1.56	0.53
tblVehicleEF	SBUS	1.5210e-003	9.3400e-004
tblVehicleEF	SBUS	0.74	0.04
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.01
tblVehicleEF	SBUS	1.6000e-005	3.2000e-005
tblVehicleEF	SBUS	1.4550e-003	8.9300e-004
tblVehicleEF	SBUS	0.32	0.02
tblVehicleEF	SBUS	2.9020e-003	2.7160e-003
tblVehicleEF	SBUS	0.02	0.01
tblVehicleEF	SBUS	1.5000e-005	3.0000e-005
tblVehicleEF	SBUS	8.2000e-005	0.01
tblVehicleEF	SBUS	7.8200e-004	3.1390e-003
tblVehicleEF	SBUS	0.09	0.13
tblVehicleEF	SBUS	3.9000e-005	0.00

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tblVehicleEF	SBUS	0.04	0.04
tblVehicleEF	SBUS	1.6400e-003	6.8630e-003
tblVehicleEF	SBUS	7.3200e-003	0.02
tblVehicleEF	SBUS	2.8270e-003	1.6170e-003
tblVehicleEF	SBUS	9.3660e-003	9.5370e-003
tblVehicleEF	SBUS	1.1000e-005	2.4000e-005
tblVehicleEF	SBUS	8.2000e-005	0.01
tblVehicleEF	SBUS	7.8200e-004	3.1390e-003
tblVehicleEF	SBUS	0.12	0.23
tblVehicleEF	SBUS	3.9000e-005	0.00
tblVehicleEF	SBUS	0.05	0.17
tblVehicleEF	SBUS	1.6400e-003	6.8630e-003
tblVehicleEF	SBUS	8.0140e-003	0.02
tblVehicleEF	UBUS	1.10	0.28
tblVehicleEF	UBUS	1.5240e-003	0.03
tblVehicleEF	UBUS	8.13	3.32
tblVehicleEF	UBUS	0.25	2.23
tblVehicleEF	UBUS	1,559.20	1,281.51
tblVehicleEF	UBUS	2.75	21.04
tblVehicleEF	UBUS	0.25	0.17
tblVehicleEF	UBUS	3.9790e-003	0.02
tblVehicleEF	UBUS	0.64	0.29
tblVehicleEF	UBUS	0.03	0.22
tblVehicleEF	UBUS	0.08	0.12
tblVehicleEF	UBUS	0.03	0.03
tblVehicleEF	UBUS	4.8830e-003	5.2090e-003
tblVehicleEF	UBUS	4.6000e-005	1.5100e-004
tblVehicleEF	UBUS	0.03	0.04
tblVehicleEF	UBUS	7.1530e-003	7.6340e-003

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tblVehicleEF	UBUS	4.6640e-003	4.9760e-003
tblVehicleEF	UBUS	4.3000e-005	1.3900e-004
tblVehicleEF	UBUS	1.0800e-004	0.04
tblVehicleEF	UBUS	7.7500e-004	0.01
tblVehicleEF	UBUS	5.4000e-005	0.00
tblVehicleEF	UBUS	0.02	0.05
tblVehicleEF	UBUS	8.9000e-005	0.03
tblVehicleEF	UBUS	5.2790e-003	0.11
tblVehicleEF	UBUS	0.01	0.01
tblVehicleEF	UBUS	2.7000e-005	2.0800e-004
tblVehicleEF	UBUS	1.0800e-004	0.04
tblVehicleEF	UBUS	7.7500e-004	0.01
tblVehicleEF	UBUS	5.4000e-005	0.00
tblVehicleEF	UBUS	1.12	0.34
tblVehicleEF	UBUS	8.9000e-005	0.03
tblVehicleEF	UBUS	5.7800e-003	0.12
tblVehicleTrips	ST_TR	1.74	11.11
tblVehicleTrips	SU_TR	1.74	11.11
tblVehicleTrips	WD_TR	1.74	11.11
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00

2.0 Emissions Summary

2.1 Overall Construction

850 San Pablo Avenue, Pinole - Contra Costa County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.7667	1.2900	1.3880	2.4200e-003	0.0708	0.0608	0.1316	0.0343	0.0572	0.0914	0.0000	208.3197	208.3197	0.0509	0.0000	209.5930
Maximum	**0.7667**	**1.29**	**1.3880**	**2.4200e-003**	**0.0708**	**0.0608**	**0.1316**	**0.0343**	**0.0572**	**0.0914**	**0.0000**	**208.3197**	**208.3197**	**0.0509**	**0.0000**	**209.593**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.6724	0.9454	1.5750	2.4200e-003	0.0319	6.9500e-003	0.0388	0.0154	6.9500e-003	0.0224	0.0000	208.3195	208.3195	0.0509	0.0000	209.5928
Maximum	**0.6724**	**0.9454**	**1.5750**	**2.4200e-003**	**0.0319**	**6.95E-03**	**0.0388**	**0.0154**	**6.95E-03**	**0.0224**	**0.0000**	**208.3195**	**208.3195**	**0.0509**	**0.0000**	**209.5928**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**12.30**	**26.71**	**-13.47**	**0.00**	**55.00**	**88.57**	**70.51**	**55.01**	**87.84**	**75.54**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	**Start Date**	**End Date**	**Maximum Unmitigated ROG + NOX (tons/quarter)**	**Maximum Mitigated ROG + NOX (tons/quarter)**
1	**4-3-2023**	**7-2-2023**	0.3761	0.2464
2	**7-3-2023**	**9-30-2023**	1.2072	1.0381

850 San Pablo Avenue, Pinole - Contra Costa County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

		Highest	1.2072	1.0381

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.5274	2.0000e-005	2.4300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.7300e-003	4.7300e-003	1.0000e-005	0.0000	5.0400e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	67.3114	67.3114	7.6600e-003	9.3000e-004	67.7796
Mobile	0.9631	0.7770	6.5946	0.0146	1.2979	0.0114	1.3093	0.3239	0.0107	0.3345	0.0000	1,350.5644	1,350.5644	0.0721	0.0632	1,371.1924
Waste						0.0000	0.0000		0.0000	0.0000	22.5036	0.0000	22.5036	1.3299	0.0000	55.7517
Water						0.0000	0.0000		0.0000	0.0000	9.6495	19.4113	29.0607	0.0354	0.0213	36.2794
Total	**1.4905**	**0.7770**	**6.5971**	**0.0146**	**1.2979**	**0.0114**	**1.3093**	**0.3239**	**0.0107**	**0.3345**	**32.1530**	**1,437.2917**	**1,469.4448**	**1.4451**	**0.0854**	**1,531.0081**

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	0.5274	2.0000e-005	2.4300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.7300e-003	4.7300e-003	1.0000e-005	0.0000	5.0400e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	67.3114	67.3114	7.6600e-003	9.3000e-004	67.7796

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mobile	0.9631	0.7770	6.5946	0.0146	1.2979	0.0114	1.3093	0.3239	0.0107	0.3345	0.0000	1,350.5644	1,350.5644	0.0721	0.0632	1,371.1924
Waste						0.0000	0.0000		0.0000	0.0000	22.5036	0.0000	22.5036	1.3299	0.0000	55.7517
Water						0.0000	0.0000		0.0000	0.0000	9.6495	19.4113	29.0607	0.0354	0.0213	36.2794
Total	**1.4905**	**0.7770**	**6.5971**	**0.0146**	**1.2979**	**0.0114**	**1.3093**	**0.3239**	**0.0107**	**0.3345**	**32.1530**	**1,437.2917**	**1,469.4448**	**1.4451**	**0.0854**	**1,531.0081**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/3/2023	4/7/2023	5	5	
2	Grading	Grading	4/10/2023	4/21/2023	5	10	
3	Trenching	Trenching	4/24/2023	5/19/2023	5	20	
4	Building Construction	Building Construction	5/22/2023	12/15/2023	5	150	
5	Paving	Paving	8/22/2023	10/2/2023	5	30	
6	Architectural Coating	Architectural Coating	8/22/2023	10/2/2023	5	30	

Acres of Grading (Site Preparation Phase): 10

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 176,915; Non-Residential Outdoor: 58,972; Striped Parking Area: 3,528 (Architectural

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Site Preparation	Graders	2	8.00	187	0.41
Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Trenching	Excavators	1	8.00	158	0.38
Site Preparation	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	2	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	1	6.00	132	0.36
Paving	Rollers	2	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	8.00	78	0.48

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
Trenching	2	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	6	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	5	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Architectural Coating	1	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 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					0.0354	0.0000	0.0354	0.0171	0.0000	0.0171	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.1000e-003	0.0666	0.0352	9.0000e-005		2.7400e-003	2.7400e-003		2.5200e-003	2.5200e-003	0.0000	8.0260	8.0260	2.6000e-003	0.0000	8.0909
Total	**6.1000e-003**	**0.0666**	**0.0352**	**9.0000e-005**	**0.0354**	**2.7400e-003**	**0.0382**	**0.0171**	**2.5200e-003**	**0.0196**	**0.0000**	**8.0260**	**8.0260**	**2.6000e-003**	**0.0000**	**8.0909**

Unmitigated Construction Off-Site

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

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0159	0.0000	0.0159	7.7100e-003	0.0000	7.7100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.5900e-003	0.0267	0.0519	9.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	8.0260	8.0260	2.6000e-003	0.0000	8.0909
Total	**1.5900e-003**	**0.0267**	**0.0519**	**9.0000e-005**	**0.0159**	**1.5000e-004**	**0.0161**	**7.7100e-003**	**1.5000e-004**	**7.8600e-003**	**0.0000**	**8.0260**	**8.0260**	**2.6000e-003**	**0.0000**	**8.0909**

Mitigated Construction Off-Site

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

Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 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					0.0354	0.0000	0.0354	0.0171	0.0000	0.0171	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.8000e-003	0.0820	0.0626	1.3000e-004		3.5000e-003	3.5000e-003		3.2200e-003	3.2200e-003	0.0000	11.6624	11.6624	3.7700e-003	0.0000	11.7567
Total	**7.8000e-003**	**0.0820**	**0.0626**	**1.3000e-004**	**0.0354**	**3.5000e-003**	**0.0389**	**0.0171**	**3.2200e-003**	**0.0203**	**0.0000**	**11.6624**	**11.6624**	**3.7700e-003**	**0.0000**	**11.7567**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0159	0.0000	0.0159	7.7100e-003	0.0000	7.7100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.2500e-003	0.0449	0.0832	1.3000e-004		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004	0.0000	11.6624	11.6624	3.7700e-003	0.0000	11.7567
Total	**2.2500e-003**	**0.0449**	**0.0832**	**1.3000e-004**	**0.0159**	**2.2000e-004**	**0.0162**	**7.7100e-003**	**2.2000e-004**	**7.9300e-003**	**0.0000**	**11.6624**	**11.6624**	**3.7700e-003**	**0.0000**	**11.7567**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Trenching - 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	3.4000e-003	0.0308	0.0549	8.0000e-005		1.5200e-003	1.5200e-003		1.3900e-003	1.3900e-003	0.0000	7.2727	7.2727	2.3500e-003	0.0000	7.3315
Total	**3.4000e-003**	**0.0308**	**0.0549**	**8.0000e-005**		**1.5200e-003**	**1.5200e-003**		**1.3900e-003**	**1.3900e-003**	**0.0000**	**7.2727**	**7.2727**	**2.3500e-003**	**0.0000**	**7.3315**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.3300e-003	0.0363	0.0626	8.0000e-005		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004	0.0000	7.2727	7.2727	2.3500e-003	0.0000	7.3315
Total	**1.3300e-003**	**0.0363**	**0.0626**	**8.0000e-005**		**1.4000e-004**	**1.4000e-004**		**1.4000e-004**	**1.4000e-004**	**0.0000**	**7.2727**	**7.2727**	**2.3500e-003**	**0.0000**	**7.3315**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive 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	0.1065	0.9707	1.0451	1.8100e-003		0.0460	0.0460		0.0434	0.0434	0.0000	155.7101	155.7101	0.0355	0.0000	156.5973
Total	**0.1065**	**0.9707**	**1.0451**	**1.8100e-003**		**0.0460**	**0.0460**		**0.0434**	**0.0434**	**0.0000**	**155.7101**	**155.7101**	**0.0355**	**0.0000**	**156.5973**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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					

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Off-Road	0.0350	0.7188	1.1724	1.8100e-003		6.0100e-003	6.0100e-003		6.0100e-003	6.0100e-003	0.0000	155.7099	155.7099	0.0355	0.0000	156.5971
Total	**0.0350**	**0.7188**	**1.1724**	**1.8100e-003**		**6.0100e-003**	**6.0100e-003**		**6.0100e-003**	**6.0100e-003**	**0.0000**	**155.7099**	**155.7099**	**0.0355**	**0.0000**	**156.5971**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 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	0.0119	0.1138	0.1541	2.4000e-004		5.6600e-003	5.6600e-003		5.2300e-003	5.2300e-003	0.0000	20.5420	20.5420	6.4200e-003	0.0000	20.7025
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Total	**0.0119**	**0.1138**	**0.1541**	**2.4000e-004**		**5.6600e-003**	**5.6600e-003**		**5.2300e-003**	**5.2300e-003**	**0.0000**	**20.5420**	**20.5420**	**6.4200e-003**	**0.0000**	**20.7025**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	3.8000e-003	0.0975	0.1681	2.4000e-004		3.6000e-004	3.6000e-004		3.6000e-004	3.6000e-004	0.0000	20.5420	20.5420	6.4200e-003	0.0000	20.7024
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.8000e-003**	**0.0975**	**0.1681**	**2.4000e-004**		**3.6000e-004**	**3.6000e-004**		**3.6000e-004**	**3.6000e-004**	**0.0000**	**20.5420**	**20.5420**	**6.4200e-003**	**0.0000**	**20.7024**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 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					
Archit. Coating	0.6273					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.8300e-003	0.0261	0.0362	6.0000e-005		1.4200e-003	1.4200e-003		1.4200e-003	1.4200e-003	0.0000	5.1065	5.1065	3.1000e-004	0.0000	5.1142
Total	**0.6311**	**0.0261**	**0.0362**	**6.0000e-005**		**1.4200e-003**	**1.4200e-003**		**1.4200e-003**	**1.4200e-003**	**0.0000**	**5.1065**	**5.1065**	**3.1000e-004**	**0.0000**	**5.1142**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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					
Archit. Coating	0.6273					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0900e-003	0.0212	0.0367	6.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	5.1065	5.1065	3.1000e-004	0.0000	5.1141
Total	**0.6284**	**0.0212**	**0.0367**	**6.0000e-005**		**8.0000e-005**	**8.0000e-005**		**8.0000e-005**	**8.0000e-005**	**0.0000**	**5.1065**	**5.1065**	**3.1000e-004**	**0.0000**	**5.1141**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.9631	0.7770	6.5946	0.0146	1.2979	0.0114	1.3093	0.3239	0.0107	0.3345	0.0000	1,350.5644	1,350.5644	0.0721	0.0632	1,371.1924
Unmitigated	0.9631	0.7770	6.5946	0.0146	1.2979	0.0114	1.3093	0.3239	0.0107	0.3345	0.0000	1,350.5644	1,350.5644	0.0721	0.0632	1,371.1924

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	1,310.35	1,310.35	1310.35	3,825,572	3,825,572
Total	1,310.35	1,310.35	1,310.35	3,825,572	3,825,572

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No Rail	9.50	7.30	7.30	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.508340	0.045239	0.219639	0.144443	0.029140	0.006601	0.008736	0.007705	0.000532	0.000481	0.024911	0.000726	0.003507
Unrefrigerated Warehouse-No Rail	0.508340	0.045239	0.219639	0.144443	0.029140	0.006601	0.008736	0.007705	0.000532	0.000481	0.024911	0.000726	0.003507

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	67.3114	67.3114	7.6600e-003	9.3000e-004	67.7796

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Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	67.3114	67.3114	7.6600e-003	9.3000e-004	67.7796
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	20580	2.7069	3.1000e-004	4.0000e-005	2.7258
Unrefrigerated Warehouse-No Rail	491166	64.6044	7.3500e-003	8.9000e-004	65.0538
Total		**67.3114**	**7.6600e-003**	**9.3000e-004**	**67.7796**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	20580	2.7069	3.1000e-004	4.0000e-005	2.7258
Unrefrigerated Warehouse-No Rail	491166	64.6044	7.3500e-003	8.9000e-004	65.0538
Total		**67.3114**	**7.6600e-003**	**9.3000e-004**	**67.7796**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.5274	2.0000e-005	2.4300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.7300e-003	4.7300e-003	1.0000e-005	0.0000	5.0400e-003
Unmitigated	0.5274	2.0000e-005	2.4300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.7300e-003	4.7300e-003	1.0000e-005	0.0000	5.0400e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0627					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4644					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.2000e-004	2.0000e-005	2.4300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.7300e-003	4.7300e-003	1.0000e-005	0.0000	5.0400e-003

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Total	**0.5274**	**2.0000e-005**	**2.4300e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**4.7300e-003**	**4.7300e-003**	**1.0000e-005**	**0.0000**	**5.0400e-003**

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	0.0627					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4644					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.2000e-004	2.0000e-005	2.4300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.7300e-003	4.7300e-003	1.0000e-005	0.0000	5.0400e-003
Total	**0.5274**	**2.0000e-005**	**2.4300e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**4.7300e-003**	**4.7300e-003**	**1.0000e-005**	**0.0000**	**5.0400e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	29.0607	0.0354	0.0213	36.2794

Unmitigated	29.0607	0.0354	0.0213	36.2794

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	27.2736 / 0	29.0607	0.0354	0.0213	36.2794
Total		**29.0607**	**0.0354**	**0.0213**	**36.2794**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	27.2736 / 0	29.0607	0.0354	0.0213	36.2794
Total		**29.0607**	**0.0354**	**0.0213**	**36.2794**

850 San Pablo Avenue, Pinole - Contra Costa County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	22.5036	1.3299	0.0000	55.7517
Unmitigated	22.5036	1.3299	0.0000	55.7517

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	110.86	22.5036	1.3299	0.0000	55.7517
Total		**22.5036**	**1.3299**	**0.0000**	**55.7517**

850 San Pablo Avenue, Pinole - Contra Costa County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	110.86	22.5036	1.3299	0.0000	55.7517
Total		**22.5036**	**1.3299**	**0.0000**	**55.7517**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment 3: CalEEMod EMFAC2021 Calculations

Summary of Construction Traffic Emissions (EMFAC2021)

Pollutants YEAR	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	NBio- CO2	CH4	N2O	CO2e
	Tons										*Metric Tons*			
Criteria Pollutants														
2023	0.0223	0.0991	0.2376	0.0010	0.0550	0.0066	0.0616	0.0083	0.0027	0.0110	91.4505	0.0044	0.0087	94.1620
Toxic Air Contaminants (0.5 Mile Trip Length)														
2023	0.0190	0.0324	0.0833	0.0001	0.0028	0.0004	0.0032	0.0004	0.0002	0.0006	8.4426	0.0019	0.0014	8.8939

CalEEMod Construction Inputs

Phase	CalEEMod WORKER TRIPS	CalEEMod VENDOR TRIPS	Total Worker Trips	Total Vendor Trips	CalEEMod HAULING TRIPS	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class	*Worker VMT*	*Vendor VMT*	*Hauling VMT*
Site Preparation	15	0	75	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	810	0	0
Grading	13	0	130	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	1404	0	0
Trenching	5	0	100	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	1080	0	0
Building Construction	74	29	11100	4350	20	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	119880	31755	400
Paving	18	0	540	0	110	10.8	7.3	7.3	LD_Mix	HDT_Mix	HHDT	5832	0	803
Architectural Coating	15	0	450	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	4860	0	0

Number of Days Per Year					
2023	4/3/23	12/15/23	257	185	
			257	**185**	***Total Workdays***

Phase	Start Date	End Date	Days/Week	Workdays
Site Preparation	4/3/2023	4/7/2023	5	5
Grading	4/10/2023	4/21/2023	5	10
Trenching	4/24/2023	5/19/2023	5	20
Building Construction	5/22/2023	12/15/2023	5	150
Paving	8/22/2023	10/2/2023	5	30
Architectural Coating	8/22/2023	10/2/2023	5	30

Source: EMFAC2021 (v1.0.2) Emission Rates
Region Type: County
Region: Contra Costa
Calendar Year: 2023
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX and DIURN. PHEV calculated based on total VMT.

Region	Calendar Y	Vehicle Ca	Model Yea	Speed	Fuel	Populatior	Total VMT	CVMT	EVMT	Trips	NOx_RUN	NOx_IDLE	NOx_STRE	PM2.5_RU	PM2.5_IDL	PM2.5_STI	PM2.5_PM	PM2.5_PM	PM10_RU	PM10_IDL	PM10_STR	PM10_PM	PM10_PM	CO2_RUNI	CO2_IDLE	CO2_STRE	CH4_RUNI	CH4_IDLE	CH4_STRE	N2O_RUN	N2O_IDLE	N2O_STRE	ROG_RUN	ROG_IDLE	ROG_STRE	ROG_HOT	ROG_RUN	ROG_DIUF	TOG_RUN	TOG_IDLE	TOG_STRE	TOG_HOT	TOG_RUN	TOG_DIUR	NH3_RUN	CO_RUNE	CO_IDLEX	CO_STREX	SOx_RUNE	SOx_IDLEX	SOx_STREX
Contra Cos	2023	HHDT	Aggregate	Aggregate	Gasoline	0.93031	50.3609	50.3609	0	18.6136	11.9991	0	2.51608	0.00397	0	0.00188	0.005	0.03372	0.00432	0	0.00205	0.02	0.09633	2201.09	0	50.4912	0.26304	0	0.00034	0.2854	0	0.04548	1.62225	0	0.00185	0.14794	1.32623	9.76638	2.36719	0	0.00203	0.14794	1.32623	9.76638	0.04106	72.9311	0	1.94297	0.02176	0	0.0005
Contra Cos	2023	HHDT	Aggregate	Aggregate	Diesel	4942.56	589482	589482	0	72214.1	2.00667	63.4902	2.82228	0.02653	0.03366	0	0.00879	0.0276	0.02772	0.03518	0	0.03514	0.07887	1654	12224.7	0	0.00085	0.23703	0	0.26059	1.92601	0	0.0182	5.10315	0	0	0	0	0.02072	5.80955	0	0	0	0	0.21423	0.09045	73.9268	0	0.01566	0.11576	0
Contra Cos	2023	HHDT	Aggregate	Aggregate	Electricity	3.72156	233.309	0	233.309	59.1555	0	0	0	0	0	0	0.00879	0.01326	0	0	0	0.03515	0.03789	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Cos	2023	HHDT	Aggregate	Aggregate	Natural Ga	440.129	31102.7	31102.7	0	4036.56	1.09177	13.8375	0	0.00155	0.02368	0	0.009	0.04711	0.00168	0.02576	0	0.036	0.13461	1391.85	10638.6	0	2.41294	37.5055	0	0.28374	2.16875	0	0.04685	0.55942	0	0	0	0	2.47668	38.3039	0	0	0	0	0.85598	14.0277	72.6127	0	0	0	0
Contra Cos	2023	LDA	Aggregate	Aggregate	Gasoline	339849	1.3E+07	1.3E+07	0	1570116	0.04775	0	0.28354	0.00121	0	0.00203	0.002	0.00258	0.00132	0	0.00221	0.008	0.00736	282.665	0	72.3737	0.00257	0	0.07943	0.00503	0	0.0349	0.01004	0	0.37246	0.10198	0.26199	1.57636	0.01464	0	0.4078	0.10198	0.26199	1.57636	0.03358	0.77144	0	3.60255	0.00279	0	0.00072
Contra Cos	2023	LDA	Aggregate	Aggregate	Diesel	1457.69	43468.2	43468.2	0	6205.57	0.22489	0	0	0.01558	0	0	0.002	0.00262	0.01628	0	0	0.008	0.00748	237.02	0	0	0.00122	0	0	0.03734	0	0	0.0263	0	0	0	0	0	0.02994	0	0	0	0	0	0.0031	0.32417	0	0	0.00225	0	0
Contra Cos	2023	LDA	Aggregate	Aggregate	Electricity	17209.2	777010	0	777010	85607	0	0	0	0	0	0	0.002	0.00153	0	0	0	0.008	0.00437	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Cos	2023	LDA	Aggregate	Aggregate	Plug-in Hy	8111	376135	191257	184877	33539	0.00327	0	0.11603	0.00065	0	0.00213	0.002	0.00135	0.00071	0	0.00232	0.008	0.00385	139.207	0	66.1141	0.00044	0	0.04308	0.0006	0	0.02123	0.00138	0	0.17431	0.04182	0.03671	0.44837	0.00202	0	0.19084	0.04182	0.03671	0.44837	0.01955	0.21371	0	1.35185	0.00138	0	0.00065
Contra Cos	2023	LDT1	Aggregate	Aggregate	Gasoline	33659.3	1179551	1179551	0	148490	0.14132	0	0.43631	0.0018	0	0.00297	0.002	0.00312	0.00196	0	0.00323	0.008	0.00891	335.393	0	89.998	0.00679	0	0.12172	0.01031	0	0.04195	0.0302	0	0.63687	0.19223	0.56129	3.06496	0.04405	0	0.6973	0.19223	0.56129	3.06496	0.03535	1.49832	0	6.13667	0.00332	0	0.00089
Contra Cos	2023	LDT1	Aggregate	Aggregate	Diesel	18.5399	234.182	234.182	0	54.7031	1.5712	0	0	0.21931	0	0	0.002	0.00357	0.22922	0	0	0.008	0.0102	416.045	0	0	0.01411	0	0	0.06555	0	0	0.30374	0	0	0	0	0	0.34579	0	0	0	0	0	0.0031	1.89408	0	0	0.00394	0	0
Contra Cos	2023	LDT1	Aggregate	Aggregate	Electricity	67.1466	2606.54	0	2606.54	317.924	0	0	0	0	0	0	0.002	0.00154	0	0	0	0.008	0.00439	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Cos	2023	LDT1	Aggregate	Aggregate	Plug-in Hy	22.0185	1175.67	542.237	633.43	91.0466	0.00296	0	0.11603	0.00039	0	0.00142	0.002	0.00136	0.00042	0	0.00154	0.008	0.00389	126.354	0	70.9153	0.0004	0	0.04332	0.00055	0	0.02146	0.00125	0	0.17431	0.0248	0.02184	0.28571	0.00183	0	0.19084	0.0248	0.02184	0.28571	0.01937	0.19428	0	1.35185	0.00125	0	0.0007
Contra Cos	2023	LDT2	Aggregate	Aggregate	Gasoline	154437	6246460	6246460	0	720661	0.07424	0	0.36556	0.00125	0	0.002	0.002	0.003	0.00136	0	0.00218	0.008	0.00858	350.475	0	90.1922	0.00302	0	0.09046	0.00632	0	0.03976	0.01179	0	0.42041	0.08871	0.23214	1.43029	0.0172	0	0.4603	0.08871	0.23214	1.43029	0.03502	0.86364	0	3.98995	0.00346	0	0.00089
Contra Cos	2023	LDT2	Aggregate	Aggregate	Diesel	633.679	26711.7	26711.7	0	3009.85	0.05174	0	0	0.00534	0	0	0.002	0.003	0.00558	0	0	0.008	0.00856	321.466	0	0	0.00061	0	0	0.05065	0	0	0.01323	0	0	0	0	0	0.01506	0	0	0	0	0	0.0031	0.1314	0	0	0.00305	0	0
Contra Cos	2023	LDT2	Aggregate	Aggregate	Electricity	543.235	20038.9	0	20038.9	2787.25	0	0	0	0	0	0	0.002	0.00152	0	0	0	0.008	0.00436	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Cos	2023	LDT2	Aggregate	Aggregate	Plug-in Hy	866.141	44564.2	21442.7	23121.5	3581.49	0.00309	0	0.11603	0.00051	0	0.00177	0.002	0.00135	0.00055	0	0.00192	0.008	0.00387	131.791	0	77.1087	0.00042	0	0.04334	0.00057	0	0.02148	0.00131	0	0.17431	0.02646	0.02452	0.31758	0.00191	0	0.19084	0.02646	0.02452	0.31758	0.02016	0.20255	0	1.35185	0.0013	0	0.00076
Contra Cos	2023	LHDT1	Aggregate	Aggregate	Gasoline	12656	475389	475389	0	188555	0.20365	0.0381	0.6782	0.00157	0	0.00032	0.002	0.0273	0.00171	0	0.00034	0.008	0.078	899.511	120.853	25.9178	0.00907	0.11817	0.03508	0.01149	0.00307	0.05319	0.04465	0.43649	0.17434	0.05133	0.27802	2.90411	0.06515	0.63692	0.19088	0.05133	0.27802	2.90411	0.04491	1.16106	3.75397	3.04824	0.00889	0.00119	0.00026
Contra Cos	2023	LHDT1	Aggregate	Aggregate	Diesel	8519.36	324282	324282	0	107163	2.08374	2.172	0	0.04453	0.0268	0	0.003	0.0273	0.04655	0.02801	0	0.012	0.078	640.407	134.888	0	0.00971	0.0051	0	0.1009	0.02125	0	0.2091	0.10976	0	0	0	0	0.23804	0.12495	0	0	0	0	0.15557	0.60128	0.90975	0	0.00607	0.00128	0
Contra Cos	2023	LHDT2	Aggregate	Aggregate	Gasoline	1464.12	54160.2	54160.2	0	21813.3	0.19053	0.03757	0.6693	0.00142	0	0.00026	0.002	0.03185	0.00154	0	0.00028	0.008	0.091	1008.95	139.514	25.8097	0.00731	0.11698	0.03441	0.01129	0.00301	0.0522	0.03456	0.43077	0.1702	0.04741	0.24891	2.66284	0.05043	0.62859	0.18635	0.04741	0.24891	2.66284	0.04497	0.9853	3.76104	3.06164	0.00997	0.00138	0.00026
Contra Cos	2023	LHDT2	Aggregate	Aggregate	Diesel	3253.08	128992	128992	0	40919.6	1.49509	2.09479	0	0.03825	0.02656	0	0.003	0.03185	0.03998	0.02776	0	0.012	0.091	774.039	214.507	0	0.00845	0.0051	0	0.12195	0.0338	0	0.18193	0.10976	0	0	0	0	0.20712	0.12495	0	0	0	0	0.17441	0.48067	0.90975	0	0.00733	0.00203	0
Contra Cos	2023	MCY	Aggregate	Aggregate	Gasoline	18091.3	103634	103634	0	36182.6	0.64032	0	0.16147	0.00179	0	0.00351	0.001	0.0042	0.00191	0	0.00372	0.004	0.012	191.034	0	53.1613	0.18394	0	0.20389	0.04256	0	0.00931	1.24601	0	1.53641	3.5946	3.80571	4.36409	1.47838	0	1.66975	3.5946	3.80571	4.36409	0.00863	14.6712	0	8.3541	0.00189	0	0.00053
Contra Cos	2023	MDV	Aggregate	Aggregate	Gasoline	101544	3817544	3817544	0	465424	0.12818	0	0.51022	0.00131	0	0.00217	0.002	0.00309	0.00142	0	0.00236	0.008	0.00883	429.589	0	111.254	0.00472	0	0.11906	0.00917	0	0.04569	0.0201	0	0.60531	0.11232	0.31651	1.86896	0.0293	0	0.66274	0.11232	0.31651	1.86896	0.03465	1.10593	0	4.58699	0.00425	0	0.0011
Contra Cos	2023	MDV	Aggregate	Aggregate	Diesel	1630.42	65604.5	65604.5	0	7692.55	0.06934	0	0	0.00604	0	0	0.002	0.00306	0.00631	0	0	0.008	0.00875	421.101	0	0	0.00058	0	0	0.06634	0	0	0.01239	0	0	0	0	0	0.01411	0	0	0	0	0	0.0031	0.20856	0	0	0.00399	0	0
Contra Cos	2023	MDV	Aggregate	Aggregate	Electricity	571.105	21131.8	0	21131.8	2933.28	0	0	0	0	0	0	0.002	0.00152	0	0	0	0.008	0.00435	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Cos	2023	MDV	Aggregate	Aggregate	Plug-in Hy	565.87	27057.6	13541.1	13516.4	2339.87	0.00321	0	0.11603	0.00067	0	0.00225	0.002	0.00135	0.00073	0	0.00245	0.008	0.00386	137.032	0	97.4524	0.00043	0	0.04317	0.00059	0	0.02131	0.00136	0	0.17431	0.03096	0.02903	0.36829	0.00199	0	0.19084	0.03096	0.02903	0.36829	0.02102	0.21045	0	1.35185	0.00135	0	0.00096
Contra Cos	2023	MH	Aggregate	Aggregate	Gasoline	1847.49	16879.8	16879.8	0	184.823	0.4116	0	0.42009	0.00156	0	0.00037	0.003	0.01576	0.00169	0	0.0004	0.012	0.04502	1947.13	0	31.5317	0.01449	0	0.0376	0.02558	0	0.04424	0.06246	0	0.1578	12.0571	0.27472	4.45514	0.09115	0	0.17277	12.0571	0.27472	4.45514	0.04484	1.46331	0	3.42513	0.01925	0	0.00031
Contra Cos	2023	MH	Aggregate	Aggregate	Diesel	776.623	7486.65	7486.65	0	77.6623	4.49278	0	0	0.10927	0	0	0.004	0.01567	0.11421	0	0	0.016	0.04479	1079.93	0	0	0.00594	0	0	0.17014	0	0	0.12785	0	0	0	0	0	0.14555	0	0	0	0	0	0.13966	0.43361	0	0	0.01023	0	0
Contra Cos	2023	MHDT	Aggregate	Aggregate	Gasoline	750.265	37968.8	37968.8	0	15011.3	0.6664	0.08802	0.47431	0.00142	0	0.00059	0.003	0.01576	0.00154	0	0.00064	0.012	0.04502	1801.93	540.659	48.2402	0.0215	0.25034	0.05212	0.03042	0.00679	0.03271	0.10893	1.00577	0.29973	0.04385	0.36049	3.47804	0.15894	1.46762	0.32817	0.04385	0.36049	3.47804	0.04496	2.31222	15.0358	6.59833	0.01781	0.00534	0.00048
Contra Cos	2023	MHDT	Aggregate	Aggregate	Diesel	5453.03	229951	229951	0	62830.4	1.45126	14.433	1.63516	0.01823	0.04111	0	0.003	0.01587	0.01906	0.04297	0	0.012	0.04535	1148.72	2311.83	0	0.00188	0.0131	0	0.18098	0.36423	0	0.04054	0.28212	0	0	0	0	0.04615	0.32117	0	0	0	0	0.20671	0.14052	7.63709	0	0.01088	0.02189	0
Contra Cos	2023	MHDT	Aggregate	Aggregate	Electricity	2.53139	54.3112	0	54.3112	29.6528	0	0	0	0	0	0	0.003	0.00795	0	0	0	0.012	0.02271	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Cos	2023	MHDT	Aggregate	Aggregate	Natural Ga	46.8362	2246.7	2246.7	0	430.573	0.13931	6.45803	0	0.00112	0.01767	0	0.003	0.01596	0.00122	0.01921	0	0.012	0.04559	981.822	5263.93	0	0.72849	17.3296	0	0.20015	1.07309	0	0.01041	0.24761	0	0	0	0	0.74348	17.6862	0	0	0	0	1.06	2.95585	33.7433	0	0	0	0
Contra Cos	2023	OBUS	Aggregate	Aggregate	Gasoline	261.913	12187.5	12187.5	0	5240.35	0.68082	0.06514	0.4407	0.00083	0	0.00025	0.003	0.01568	0.0009	0	0.00027	0.012	0.0448	1795.28	383.923	32.5173	0.019	0.19356	0.03859	0.03149	0.00507	0.03162	0.0932	0.74737	0.2068	0.0363	0.16261	2.92198	0.136	1.09056	0.22642	0.0363	0.16261	2.92198	0.04494	2.07945	5.78133	4.34703	0.01775	0.0038	0.00032
Contra Cos	2023	OBUS	Aggregate	Aggregate	Diesel	127.726	9153.78	9153.78	0	1488.89	1.87858	12.5965	1.55095	0.03819	0.0145	0	0.003	0.01996	0.03992	0.01515	0	0.012	0.05702	1418.73	2569.66	0	0.00415	0.03951	0	0.22352	0.40485	0	0.0894	0.85066	0	0	0	0	0.10177	0.96841	0	0	0	0	0.20771	0.26662	13.2062	0	0.01343	0.02433	0
Contra Cos	2023	OBUS	Aggregate	Aggregate	Natural Ga	0.95861	50.521	50.521	0	8.53166	0.25096	1.55125	0	0.00077	0.00357	0	0.003	0.01615	0.00084	0.00388	0	0.012	0.04614	1055.21	1234.83	0	0.75662	4.40776	0	0.21511	0.25173	0	0.01081	0.06298	0	0	0	0	0.77219	4.49844	0	0	0	0	1.06	3.16495	6.6088	0	0	0	0
Contra Cos	2023	SBUS	Aggregate	Aggregate	Gasoline	72.516	3942.49	3942.49	0	290.064	0.21351	0.92653	0.64521	0.00097	0	0.00066	0.002	0.01572	0.00106	0	0.00072	0.008	0.04492	791.035	2535.37	54.4539	0.00471	2.52152	0.06275	0.01582	0.09366	0.06471	0.02171	10.6415	0.34326	0.06587	0.14303	0.87926	0.03169	15.5281	0.37583	0.06587	0.14303	0.87926	0.045	0.51378	82.2409	8.78765	0.00782	0.02506	0.00054
Contra Cos	2023	SBUS	Aggregate	Aggregate	Diesel	424.701	10038.9	10038.9	0	6149.67	3.1965	19.3135	0.54375	0.0163	0.01436	0	0.003	0.01572	0.01703	0.01501	0	0.012	0.04492	1139.24	2253.9	0	0.00233	0.0079	0	0.17949	0.3551	0	0.05021	0.1701	0	0	0	0	0.05716	0.19364	0	0	0	0	0.15443	0.15967	4.98162	0	0.01079	0.02134	0
Contra Cos	2023	SBUS	Aggregate	Aggregate	Electricity	0.03591	0.41624	0	0.41624	0.51992	0	0	0	0	0	0	0.003	0.00786	0	0	0	0.012	0.02246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Cos	2023	SBUS	Aggregate	Aggregate	Natural Ga	19.1092	478.257	478.257	0	276.701	0.62605	5.30851	0	0.00338	0.01046	0	0.003	0.01572	0.00367	0.01138	0	0.012	0.04492	1299.98	4072.28	0	3.59838	15.7211	0	0.26501	0.83016	0	0.05141	0.22462	0	0	0	0	3.67241	16.0445	0	0	0	0	1.06	12.41	18.7238	0	0	0	0
Contra Cos	2023	UBUS	Aggregate	Aggregate	Gasoline	102.105	5572.51	5572.51	0	408.419	0.13826	0	0.71665	0.00113	0	0.00047	0.0025	0.0352	0.00123	0	0.00051	0.01001	0.10057	1389.67	0	71.5651	0.00298	0	0.0863	0.01356	0	0.073	0.00953	0	0.35761	0.03905	0.0926	0.48981	0.0139	0	0.39154	0.03905	0.0926	0.48981	0.045	0.43274	0	7.62397	0.01374	0	0.00071
Contra Cos	2023	UBUS	Aggregate	Aggregate	Diesel	225.16	23149.5	23149.5	0	900.64	1.39034	0	0	0.00669	0	0	0.00779	0.0385	0.007	0	0	0.03116	0.11	1371.96	0	0	0.00483	0	0	0.21615	0	0	0.10395	0	0	0	0	0	0.11834	0	0	0	0	0	0.18455	0.12394	0	0	0.013	0	0
Contra Cos	2023	UBUS	Aggregate	Aggregate	Electricity	12.1122	336.065	0	336.065	48.4489	0	0	0	0	0	0	0.00575	0.01925	0	0	0	0.02301	0.055	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Cos	2023	UBUS	Aggregate	Aggregate	Natural Ga	7.77903	679.308	679.308	0	31.1161	0.04082	0	0	0.00023	0	0	0.00582	0.0385	0.00024	0	0	0.02329	0.11	1103.97	0	0	3.46872	0	0	0.22505	0	0	0.04956	0	0	0	0	0	3.54008	0	0	0	0	0	0.97	35.4722	0	0	0	0	0

Source: EMFAC2021 (v1.0.2) Emission Rates
Region Type: County
Region: Contra Costa
Calendar Year: 2024
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX and DIURN. PHEV calculated based on total VMT.

Region	Calendar Y	Vehicle Ca	Model Yea	Speed	Fuel	Populatior	Total VMT	CVMT	EVMT	Trips	NOx RUN	NOx IDLE	NOx STRE	PM2.5 RU	PM2.5 IDL	PM2.5 STI	PM2.5 PM	PM2.5 PM	PM10 RU	PM10 IDL	PM10 STR	PM10 PM	PM10 PM	CO2 RUN	CO2 IDLE	CO2 STRE	CH4 RUN	CH4 IDLE	CH4 STRE	N2O RUN	N2O IDLE	N2O STRE	ROG RUN	ROG IDLE	ROG STRE	ROG HOT	ROG RUN	ROG DIUR	TOG RUN	TOG IDLE	TOG STRE	TOG HOT	TOG RUN	TOG DIUR	NH3 RUN	CO RUNE	CO_IDLEX	CO_STREX	SOx RUNE	SOx IDLEX	SOx_STREX
Contra Cos	2024	HHDT	Aggregate	Aggregate	Gasoline	0.81607	55.8723	55.8723	0	16.328	8.6939	0	1.87331	0.00313	0	0.00172	0.005	0.0327	0.00341	0	0.00187	0.02	0.09342	2106.93	0	50.6671	0.20075	0	0.00033	0.22707	0	0.03438	1.20229	0	0.00181	0.13631	1.22196	9.00043	1.75438	0	0.00198	0.13631	1.22196	9.00043	0.04227	57.5641	0	2.58986	0.02083	0	0.0005
Contra Cos	2024	HHDT	Aggregate	Aggregate	Diesel	5091.69	595372	595372	0	74503.9	1.93055	62.4167	2.87363	0.0262	0.03187	0	0.00879	0.02753	0.02738	0.03332	0	0.03515	0.07866	1631.92	11982.4	0	0.00081	0.23618	0	0.25711	1.88782	0	0.01745	5.08487	0	0	0	0	0.01987	5.78873	0	0	0	0	0.21471	0.08538	73.8413	0	0.01545	0.11347	0
Contra Cos	2024	HHDT	Aggregate	Aggregate	Electricity	16.2027	1607.76	0	1607.76	218.208	0	0	0	0	0	0	0.00863	0.01415	0	0	0	0.03453	0.04043	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Cos	2024	HHDT	Aggregate	Aggregate	Natural Ga	463.32	31836.4	31836.4	0	4230.92	1.02738	13.4936	0	0.00152	0.02427	0	0.009	0.04784	0.00165	0.02639	0	0.036	0.13668	1382.06	10598.6	0	2.31677	36.4292	0	0.28174	2.16058	0	0.04409	0.54083	0	0	0	0	2.37696	37.2018	0	0	0	0	0.84842	13.6386	73.098	0	0	0	0
Contra Cos	2024	LDA	Aggregate	Aggregate	Gasoline	337675	1.3E+07	1.3E+07	0	1559344	0.04277	0	0.26975	0.00117	0	0.00196	0.002	0.00258	0.00127	0	0.00213	0.008	0.00736	277.215	0	70.8132	0.00232	0	0.07509	0.00472	0	0.03405	0.00887	0	0.34757	0.09805	0.25348	1.5303	0.01294	0	0.38054	0.09805	0.25348	1.5303	0.03453	0.72382	0	3.39638	0.00274	0	0.0007
Contra Cos	2024	LDA	Aggregate	Aggregate	Diesel	1353.06	39823.4	39823.4	0	5730.35	0.20168	0	0	0.01398	0	0	0.002	0.00263	0.01462	0	0	0.008	0.0075	235.3	0	0	0.00111	0	0	0.03707	0	0	0.02397	0	0	0	0	0	0.02729	0	0	0	0	0	0.0031	0.31371	0	0	0.00223	0	0
Contra Cos	2024	LDA	Aggregate	Aggregate	Electricity	19605.8	914777	0	914777	97154.5	0	0	0	0	0	0	0.002	0.00153	0	0	0	0.008	0.00437	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Cos	2024	LDA	Aggregate	Aggregate	Plug-in Hy	8994.06	416941	206978	209964	37190.4	0.00319	0	0.11603	0.0006	0	0.00203	0.002	0.00135	0.00066	0	0.00221	0.008	0.00387	135.898	0	65.1206	0.00043	0	0.04295	0.00058	0	0.02111	0.00135	0	0.17431	0.04207	0.03799	0.44841	0.00197	0	0.19084	0.04207	0.03799	0.44841	0.01936	0.20861	0	1.35185	0.00134	0	0.00064
Contra Cos	2024	LDT1	Aggregate	Aggregate	Gasoline	32588.8	1149589	1149589	0	143596	0.12661	0	0.41299	0.0017	0	0.00281	0.002	0.00312	0.00185	0	0.00306	0.008	0.00892	330.278	0	88.1522	0.00609	0	0.1145	0.00948	0	0.04086	0.02682	0	0.5923	0.18385	0.53152	2.93502	0.03913	0	0.64849	0.18385	0.53152	2.93502	0.03558	1.3792	0	5.72447	0.00327	0	0.00087
Contra Cos	2024	LDT1	Aggregate	Aggregate	Diesel	16.6614	204.939	204.939	0	48.221	1.56453	0	0	0.21868	0	0	0.002	0.00357	0.22857	0	0	0.008	0.01019	415.676	0	0	0.01406	0	0	0.06549	0	0	0.30271	0	0	0	0	0	0.34462	0	0	0	0	0	0.0031	1.88576	0	0	0.00394	0	0
Contra Cos	2024	LDT1	Aggregate	Aggregate	Electricity	76.8535	3197.23	0	3197.23	366.338	0	0	0	0	0	0	0.002	0.00154	0	0	0	0.008	0.00439	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Cos	2024	LDT1	Aggregate	Aggregate	Plug-in Hy	34.4059	1835.08	820.548	1014.53	142.268	0.00287	0	0.11603	0.00037	0	0.00139	0.002	0.00137	0.0004	0	0.00151	0.008	0.0039	122.491	0	69.3514	0.00039	0	0.04315	0.00053	0	0.0213	0.00122	0	0.17431	0.02433	0.021	0.27913	0.00177	0	0.19084	0.02433	0.021	0.27913	0.01878	0.18831	0	1.35185	0.00121	0	0.00069
Contra Cos	2024	LDT2	Aggregate	Aggregate	Gasoline	156321	6370854	6370854	0	728853	0.06623	0	0.34198	0.00122	0	0.00196	0.002	0.00301	0.00132	0	0.00214	0.008	0.00859	342.496	0	87.9956	0.00277	0	0.08583	0.00589	0	0.03844	0.01066	0	0.3945	0.08577	0.22769	1.40659	0.01556	0	0.43193	0.08577	0.22769	1.40659	0.03586	0.81113	0	3.77354	0.00339	0	0.00087
Contra Cos	2024	LDT2	Aggregate	Aggregate	Diesel	646.578	27148.8	27148.8	0	3058.02	0.04703	0	0	0.00495	0	0	0.002	0.00301	0.00517	0	0	0.008	0.00861	316.255	0	0	0.00059	0	0	0.04983	0	0	0.01267	0	0	0	0	0	0.01442	0	0	0	0	0	0.0031	0.12999	0	0	0.003	0	0
Contra Cos	2024	LDT2	Aggregate	Aggregate	Electricity	793.66	29152.9	0	29152.9	4055.08	0	0	0	0	0	0	0.002	0.00153	0	0	0	0.008	0.00436	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Cos	2024	LDT2	Aggregate	Aggregate	Plug-in Hy	1079.61	55187.6	25870.7	29316.9	4464.18	0.00301	0	0.11603	0.00047	0	0.00168	0.002	0.00136	0.00051	0	0.00183	0.008	0.00389	128.386	0	75.6725	0.00041	0	0.04317	0.00055	0	0.02132	0.00127	0	0.17431	0.02618	0.02375	0.30855	0.00186	0	0.19084	0.02618	0.02375	0.30855	0.01965	0.19727	0	1.35185	0.00127	0	0.00075
Contra Cos	2024	LHDT1	Aggregate	Aggregate	Gasoline	12544.5	477190	477190	0	186894	0.1829	0.03714	0.66073	0.00152	0	0.0003	0.002	0.0273	0.00166	0	0.00032	0.008	0.078	883.356	119.879	25.8932	0.00818	0.11596	0.03383	0.01036	0.00304	0.05253	0.04007	0.42555	0.16716	0.04907	0.2696	2.82667	0.05846	0.62096	0.18302	0.04907	0.2696	2.82667	0.04493	1.10082	3.75625	3.08438	0.00873	0.00119	0.00026
Contra Cos	2024	LHDT1	Aggregate	Aggregate	Diesel	8493.03	325050	325050	0	106832	1.90209	2.09669	0	0.04204	0.02666	0	0.003	0.0273	0.04394	0.02787	0	0.012	0.078	637.732	133.653	0	0.00922	0.0051	0	0.10047	0.02106	0	0.19842	0.10976	0	0	0	0	0.22589	0.12495	0	0	0	0	0.16167	0.56551	0.90975	0	0.00604	0.00127	0
Contra Cos	2024	LHDT1	Aggregate	Aggregate	Electricity	36.0144	2734.93	0	2734.93	503.099	0	0	0	0	0	0	0.002	0.01365	0	0	0	0.008	0.039	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Cos	2024	LHDT2	Aggregate	Aggregate	Gasoline	1457.07	54488.4	54488.4	0	21708.2	0.1695	0.03647	0.65113	0.00136	0	0.00024	0.002	0.03185	0.00148	0	0.00026	0.008	0.091	992.057	138.412	25.619	0.00635	0.11425	0.03309	0.01019	0.00297	0.05135	0.02958	0.41819	0.16255	0.04514	0.24045	2.59403	0.04316	0.61022	0.17797	0.04514	0.24045	2.59403	0.04498	0.91236	3.76397	3.07478	0.00981	0.00137	0.00025
Contra Cos	2024	LHDT2	Aggregate	Aggregate	Diesel	3307.74	131282	131282	0	41607.2	1.37247	2.01348	0	0.03647	0.02656	0	0.003	0.03185	0.03812	0.02777	0	0.012	0.091	767.631	212.473	0	0.00809	0.0051	0	0.12094	0.03348	0	0.17421	0.10976	0	0	0	0	0.19833	0.12495	0	0	0	0	0.1789	0.45776	0.90975	0	0.00727	0.00201	0
Contra Cos	2024	LHDT2	Aggregate	Aggregate	Electricity	9.32166	670.702	0	670.702	123.391	0	0	0	0	0	0	0.002	0.01593	0	0	0	0.008	0.0455	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Cos	2024	MCY	Aggregate	Aggregate	Gasoline	18015.4	103611	103611	0	36030.9	0.62253	0	0.15485	0.00178	0	0.00332	0.001	0.0042	0.0019	0	0.00353	0.004	0.012	190.319	0	51.9912	0.17822	0	0.19855	0.0418	0	0.00896	1.196	0	1.49035	3.59485	3.81875	4.35055	1.42432	0	1.61984	3.59485	3.81875	4.35055	0.00869	14.1539	0	8.30729	0.00188	0	0.00051
Contra Cos	2024	MDV	Aggregate	Aggregate	Gasoline	101284	3842162	3842162	0	463945	0.11252	0	0.46964	0.00125	0	0.00208	0.002	0.00309	0.00136	0	0.00226	0.008	0.00883	420.455	0	108.693	0.00421	0	0.11111	0.00836	0	0.04372	0.01767	0	0.55713	0.10904	0.31352	1.86066	0.02577	0	0.60999	0.10904	0.31352	1.86066	0.03537	1.01554	0	4.29089	0.00416	0	0.00107
Contra Cos	2024	MDV	Aggregate	Aggregate	Diesel	1627.3	64623	64623	0	7621.12	0.06448	0	0	0.00587	0	0	0.002	0.00309	0.00613	0	0	0.008	0.00883	416.442	0	0	0.00056	0	0	0.06561	0	0	0.01209	0	0	0	0	0	0.01376	0	0	0	0	0	0.0031	0.20834	0	0	0.00395	0	0
Contra Cos	2024	MDV	Aggregate	Aggregate	Electricity	849.928	31289.9	0	31289.9	4345.87	0	0	0	0	0	0	0.002	0.00153	0	0	0	0.008	0.00436	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Cos	2024	MDV	Aggregate	Aggregate	Plug-in Hy	698.731	33546	16194.3	17351.8	2889.25	0.0031	0	0.11603	0.00059	0	0.00206	0.002	0.00136	0.00064	0	0.00224	0.008	0.00388	132.179	0	94.9081	0.00042	0	0.043	0.00057	0	0.02116	0.00131	0	0.17431	0.03172	0.02771	0.35018	0.00191	0	0.19084	0.03172	0.02771	0.35018	0.02028	0.20298	0	1.35185	0.00131	0	0.00094
Contra Cos	2024	MH	Aggregate	Aggregate	Gasoline	1757.82	16248.6	16248.6	0	175.852	0.37633	0	0.42839	0.0015	0	0.00036	0.003	0.01576	0.00163	0	0.00039	0.012	0.04502	1946.72	0	31.3712	0.01295	0	0.03722	0.02413	0	0.04558	0.05456	0	0.15439	11.625	0.26928	4.43627	0.07962	0	0.16904	11.625	0.26928	4.43627	0.0449	1.23056	0	3.33117	0.01925	0	0.00031
Contra Cos	2024	MH	Aggregate	Aggregate	Diesel	778.173	7477.58	7477.58	0	77.8173	4.38387	0	0	0.10507	0	0	0.004	0.01567	0.10982	0	0	0.016	0.04479	1080.3	0	0	0.00586	0	0	0.1702	0	0	0.12626	0	0	0	0	0	0.14374	0	0	0	0	0	0.14385	0.42651	0	0	0.01024	0	0
Contra Cos	2024	MHDT	Aggregate	Aggregate	Gasoline	739.495	38664.3	38664.3	0	14795.8	0.55459	0.08824	0.46086	0.00138	0	0.00056	0.003	0.01576	0.00151	0	0.00061	0.012	0.04502	1775.67	535.332	47.2501	0.01775	0.25472	0.05024	0.02623	0.00704	0.03299	0.08904	1.00901	0.28452	0.03997	0.32933	3.20988	0.12993	1.47234	0.31151	0.03997	0.32933	3.20988	0.04498	1.87362	15.0734	6.25075	0.01755	0.00529	0.00047
Contra Cos	2024	MHDT	Aggregate	Aggregate	Diesel	5511.49	231443	231443	0	63571	1.33374	13.9123	1.65707	0.01584	0.03418	0	0.003	0.01587	0.01656	0.03572	0	0.012	0.04535	1144.49	2295.79	0	0.00165	0.01224	0	0.18031	0.3617	0	0.03544	0.26347	0	0	0	0	0.04035	0.29994	0	0	0	0	0.20849	0.12759	7.60778	0	0.01084	0.02174	0
Contra Cos	2024	MHDT	Aggregate	Aggregate	Electricity	15.9389	898.224	0	898.224	202.794	0	0	0	0	0	0	0.003	0.00794	0	0	0	0.012	0.02268	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Cos	2024	MHDT	Aggregate	Aggregate	Natural Ga	50.6988	2393.49	2393.49	0	464.978	0.1309	6.45054	0	0.00117	0.01822	0	0.003	0.01596	0.00127	0.01982	0	0.012	0.04561	977.491	5284.91	0	0.73577	17.0997	0	0.19927	1.07736	0	0.01051	0.24432	0	0	0	0	0.75091	17.4515	0	0	0	0	1.06	2.9576	34.9858	0	0	0	0
Contra Cos	2024	OBUS	Aggregate	Aggregate	Gasoline	253.148	11671.6	11671.6	0	5064.98	0.62997	0.06514	0.43994	0.00087	0	0.00026	0.003	0.01568	0.00095	0	0.00028	0.012	0.0448	1775.4	381.757	32.2434	0.01757	0.19381	0.03806	0.02942	0.00511	0.03166	0.08624	0.74743	0.20376	0.03728	0.17577	3.14909	0.12584	1.09064	0.22309	0.03728	0.17577	3.14909	0.04494	1.91137	5.78166	4.27245	0.01755	0.00377	0.00032
Contra Cos	2024	OBUS	Aggregate	Aggregate	Diesel	129.949	9209.19	9209.19	0	1517.36	1.89764	12.5971	1.55653	0.03894	0.01421	0	0.003	0.01995	0.0407	0.01486	0	0.012	0.05699	1414.54	2565.23	0	0.00427	0.03973	0	0.22286	0.40415	0	0.09195	0.85531	0	0	0	0	0.10467	0.9737	0	0	0	0	0.20736	0.27285	13.2848	0	0.01339	0.02429	0
Contra Cos	2024	OBUS	Aggregate	Aggregate	Electricity	0.55296	51.9021	0	51.9021	11.0636	0	0	0	0	0	0	0.003	0.00784	0	0	0	0.012	0.0224	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Cos	2024	OBUS	Aggregate	Aggregate	Natural Ga	0.9984	52.0948	52.0948	0	8.88574	0.24486	1.54899	0	0.0008	0.00362	0	0.003	0.01615	0.00087	0.00394	0	0.012	0.04614	1052.79	1234.27	0	0.75997	4.37981	0	0.21462	0.25161	0	0.01086	0.06258	0	0	0	0	0.7756	4.46992	0	0	0	0	1.06	3.17396	6.73055	0	0	0	0
Contra Cos	2024	SBUS	Aggregate	Aggregate	Gasoline	75.7911	4157.44	4157.44	0	303.165	0.21645	0.92653	0.65672	0.00098	0	0.00066	0.002	0.01572	0.00107	0	0.00072	0.008	0.04492	787.109	2523.75	54.1204	0.00455	2.52509	0.06294	0.01593	0.09353	0.06561	0.02094	10.6415	0.34403	0.07052	0.15415	0.94249	0.03056	15.5281	0.37667	0.07052	0.15415	0.94249	0.045	0.49603	82.2409	8.69808	0.00778	0.02495	0.00054
Contra Cos	2024	SBUS	Aggregate	Aggregate	Diesel	428.989	10014.8	10014.8	0	6211.76	3.09019	18.9975	0.5533	0.01585	0.01368	0	0.003	0.01572	0.01656	0.0143	0	0.012	0.04492	1136.38	2245.9	0	0.00231	0.00788	0	0.17904	0.35384	0	0.04968	0.16957	0	0	0	0	0.05656	0.19305	0	0	0	0	0.15686	0.15896	5.04088	0	0.01076	0.02127	0
Contra Cos	2024	SBUS	Aggregate	Aggregate	Electricity	1.03574	35.8757	0	35.8757	11.8196	0	0	0	0	0	0	0.00254	0.00786	0	0	0	0.01015	0.02246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Cos	2024	SBUS	Aggregate	Aggregate	Natural Ga	19.5655	483.537	483.537	0	283.309	0.61266	5.30043	0	0.00338	0.01065	0	0.003	0.01572	0.00367	0.01159	0	0.012	0.04492	1293.02	4076.99	0	3.56148	15.6213	0	0.26359	0.83112	0	0.05089	0.2232	0	0	0	0	3.63475	15.9427	0	0	0	0	1.06	12.2363	19.1584	0	0	0	0
Contra Cos	2024	UBUS	Aggregate	Aggregate	Gasoline	102.407	5589.01	5589.01	0	409.628	0.14929	0	0.73938	0.00113	0	0.00047	0.0025	0.0352	0.00123	0	0.00051	0.01001	0.10057	1389.55	0	71.5508	0.00296	0	0.08963	0.01433	0	0.07394	0.0095	0	0.37289	0.04579	0.09259	0.50408	0.01386	0	0.40827	0.04579	0.09259	0.50408	0.045	0.44425	0	7.58527	0.01374	0	0.00071
Contra Cos	2024	UBUS	Aggregate	Aggregate	Diesel	211.734	21902.9	21902.9	0	846.936	0.3556	0	0	0.00646	0	0	0.00772	0.0385	0.00675	0	0	0.03087	0.11	1274.08	0	0	0.00302	0	0	0.20073	0	0	0.06494	0	0	0	0	0	0.07393	0	0	0	0	0	0.22	0.07314	0	0	0.01207	0	0
Contra Cos	2024	UBUS	Aggregate	Aggregate	Electricity	12.1122	336.065	0	336.065	48.4489	0	0	0	0	0	0	0.00575	0.01925	0	0	0	0.02301	0.055	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Cos	2024	UBUS	Aggregate	Aggregate	Natural Ga	21.9304	1997.38	1997.38	0	87.7216	0.05668	0	0	0.00028	0	0	0.00791	0.0385	0.00029	0	0	0.03162	0.11	1276.32	0	0	4.15494	0	0	0.26019	0	0	0.05937	0	0	0	0	0	4.24042	0	0	0	0	0	0.97	47.4565	0	0	0	0	0

Category		Mix %	Adj	ROG_DIURN	ROG_HTSK	ROG_IDLEX	ROG_RESTL	ROG_RUNEX	ROG_RUNLS	ROG_STREX	NOX_IDLEX	NOX_RUNEX	NOX_STREX
Hauling	HHDT	100.0	1	0.000119035	3.60768E-05	0.333674272	0	0.01975534	0.00032342	4.52025E-07	4.1910198	1.960895882	2.670763444
	MHD	0.0	0	0.033325488	0.008405867	0.029432001	0	0.04989183	0.06911024	0.057462096	1.0098323	1.329777617	1.403006149
Vendor	HHDT	50.0	0.5	5.95176E-05	1.80384E-05	0.166837136	0	0.00987767	0.00016171	2.26012E-07	2.0955099	0.980447941	1.335381722
	MHD	50.0	0.5	0.016662744	0.004202933	0.014716	0	0.02494592	0.03455512	0.028731048	0.5049162	0.664888808	0.701503074
			1	0.016722262	0.004220972	0.181553136	0	0.03482358	0.03471683	0.028731274	2.6004261	1.645336749	2.036884796
Worker	LDA	50.0	0.5	0.159059343	0.047631967	0	0	0.00464844	0.12167311	0.174187602	0	0.022225864	0.132437434
	LDT1	25.0	0.25	0.173159282	0.047911445	0	0	0.00753876	0.13988807	0.158749663	0	0.035288164	0.108756766
	LDT2	25.0	0.25	0.075736866	0.021924073	0	0	0.0029216	0.0573184	0.103965976	0	0.018351837	0.090359334
			1	0.40795549	0.117467485	0	0	0.0151088	0.31887958	0.436903242	0	0.075865865	0.331553534

Category		CO_IDLEX	CO_RUNEX	CO_STREX	SO2_IDLEX	SO2_RUNEX	SO2_STREX	Road Dust PM10	PM10_P MBW	PM10_P MTW	PM10_ID LEX	PM10_RU NEX	PM10_STREX
Hauling	HHDT	5.205744	0.7945193	0.000474	0.0074959	0.014872344	1.21726E-07		0.081645	0.035185	0.002426	0.026408	4.98712E-07
	MHD	0.696107	0.4690418	1.264969	0.0015758	0.011759666	9.14274E-05	0.299	0.045302	0.012	0.003004	0.016444	0.000122777
Vendor	HHDT	2.602872	0.3972597	0.000237	0.003748	0.007436172	6.08629E-08		0.040823	0.017592	0.001213	0.013204	2.49356E-07
	MHD	0.348054	0.2345209	0.632484	0.0007879	0.005879833	4.57137E-05		0.022651	0.006	0.001502	0.008222	6.13887E-05
		2.950926	0.6317806	0.632721	0.0045359	0.013316005	4.57746E-05	0.299	0.063474	0.023592	0.002715	0.021426	6.1638E-05
Worker	LDA	0	0.3560821	1.681473	0	0.001299628	0.000337759		0.003552	0.004	0	0.000637	0.001044705
	LDT1	0	0.3734501	1.529599	0	0.000826617	0.000221845		0.002225	0.002	0	0.000499	0.000804791
	LDT2	0	0.2132938	0.986331	0	0.00085922	0.000220982		0.002134	0.002	0	0.000342	0.000540333
		0	0.942826	4.197404	0	0.002985466	0.000780586	0.299	0.007911	0.008	0	0.001478	0.002389829

Category		Road Dust PM25	PM25_P MBW	PM25_P MTW	PM25_IDL EX	PM25_RUN EX	PM25_STR EX	CO2_NBIO _IDLEX	CO2_NBIO _RUNEX	CO2_NBIO _STREX	CH4_IDLE X	CH4_RUNEX	CH4_STREX	N2O IDLE	N2O_RUNEX	N2O_STREX
					19	22	23	8	9	10						
Hauling	HHDT		0.028576	0.008796	0.002316	0.0252624	4.59E-07	852.94069	1640.2862	0.0123129	0.231615	0.121701165	8.32892E-08	0.137222	0.261651501	1.1091E-05
	MHD	0.04499	0.015856	0.003	0.002873	0.0157245	0.000113	169.32718	1238.8832	9.2481499	0.013677	0.010679928	0.009992755	0.026072	0.159948685	0.00627157
Vendor	HHDT		0.014288	0.004398	0.001158	0.0126312	2.29E-07	426.47035	820.14309	0.0061565	0.115807	0.060850583	4.16446E-08	0.068611	0.130825751	5.5457E-06
	MHD		0.007928	0.0015	0.001437	0.0078622	5.64E-05	84.663589	619.44159	4.6240749	0.006838	0.005339964	0.004996377	0.013036	0.079974343	0.00313578
		0.04499	0.022216	0.005898	0.002595	0.0204934	5.67E-05	511.13393	1439.5847	4.6302314	0.122646	0.066190547	0.004996419	0.081647	0.210800093	0.00314133
Worker	LDA		0.001243	0.001	0	0.0005865	0.000961	0	131.47654	34.165355	0	0.001184674	0.037202819	0	0.002367558	0.01636782
	LDT1		0.000779	0.0005	0	0.0004589	0.00074	0	83.615625	22.440294	0	0.001693475	0.030342937	0	0.002573045	0.01045704
	LDT2		0.000747	0.0005	0	0.000315	0.000497	0	86.926746	22.352958	0	0.000744582	0.022377856	0	0.001612042	0.00983756
		0.04499	0.002769	0.002	0	0.0013604	0.002197	0	302.01892	78.958608	0	0.003622731	0.089923612	0	0.006552645	0.03666242

Category		Mix %	Adj	ROG_DIURN	ROG_HTSK	ROG_IDLEX	ROG_RESTL	ROG_RUNEX	ROG_RUNLS	ROG_STREX	NOX_IDLEX	NOX_RUNEX	NOX_STREX
Hauling	HHDT	100.0	1	9.3011E-05	2.81847E-05	0.33102935	0	0.01886399	0.00025266	3.73517E-07	4.1035977	1.880488499	2.711524951
	MHD	0.0	0	0.030033562	0.007482222	0.027970982	0	0.0426883	0.06165233	0.053263589	0.9751366	1.208639976	1.419127165
Vendor	HHDT	50.0	0.5	4.65055E-05	1.40924E-05	0.165514675	0	0.009432	0.00012633	1.86759E-07	2.0517989	0.940244249	1.355762475
	MHD	50.0	0.5	0.015016781	0.003741111	0.013985491	0	0.02134415	0.03082616	0.026631794	0.4875683	0.604319988	0.709563582
			1	0.015063287	0.003755204	0.179500166	0	0.03077615	0.03095249	0.026631981	2.5393672	1.544564237	2.065326058
Worker	LDA	50.0	0.5	0.153222319	0.04544464	0	0	0.00405898	0.11671113	0.161366765	0	0.019648875	0.125026152
	LDT1	25.0	0.25	0.165897543	0.045791519	0	0	0.00668869	0.13237082	0.147544986	0	0.03157971	0.102877067
	LDT2	25.0	0.25	0.074353224	0.021147368	0	0	0.00263537	0.05606948	0.097346299	0	0.016328767	0.084331972
			1	0.393473086	0.112383528	0	0	0.01338304	0.30515144	0.40625805	0	0.067557352	0.312235192

Category		CO_IDLEX	CO_RUNEX	CO_STREX	SO2_IDLEX	SO2_RUNEX	SO2_STREX	Road Dust PM10	PM10_PMBW	PM10_PMTW	PM10_IDLEX	PM10_RUNEX	PM10_STREX
Hauling	HHDT	5.189925	0.7763963	0.000535	0.0073159	0.014631936	1.03567E-07		0.081502	0.035187	0.002303	0.026009	3.86836E-07
	MHD	0.694008	0.3988674	1.170184	0.0015655	0.011657031	8.74473E-05	0.299	0.045232	0.012	0.002504	0.014244	0.000113752
Vendor	HHDT	2.594963	0.3881981	0.000268	0.003658	0.007315968	5.17836E-08		0.040751	0.017594	0.001151	0.013005	1.93418E-07
	MHD	0.347004	0.1994337	0.585092	0.0007828	0.005828516	4.37237E-05		0.022616	0.006	0.001252	0.007122	5.68761E-05
		2.941967	0.5876318	0.58536	0.0044407	0.013144483	4.37755E-05	0.299	0.063367	0.023594	0.002403	0.020126	5.70695E-05
Worker	LDA	0	0.3304173	1.573007	0	0.001260632	0.000328223		0.003534	0.004	0	0.000606	0.001003616
	LDT1	0	0.3433941	1.425922	0	0.000813238	0.000217196		0.002226	0.002	0	0.00047	0.000762335
	LDT2	0	0.199852	0.930671	0	0.000837761	0.000215209		0.002133	0.002	0	0.000332	0.000528429
		0	0.8736634	3.9296	0	0.002911632	0.000760628	0.299	0.007893	0.008	0	0.001408	0.00229438

Category		Road Dust PM25	PM25_PMBW	PM25_PMTW	PM25_IDLEX	PM25_RUNEX	PM25_STREX	CO2_NBIO_IDLEX	CO2_NBIO_RUNEX	CO2_NBIO_STREX	CH4_IDLEX	CH4_RUNEX	CH4_STREX	N2O IDLE	N2O_RUNEX	N2O_STREX
					19	22	23	8	9	10						
Hauling	HHDT		0.028526	0.008797	0.002198	0.0248811	3.56E-07	834.7669	1615.1384	0.0104761	0.228961	0.118071114	6.87739E-08	0.134397	0.257696262	7.1095E-06
	MHD	0.04499	0.015831	0.003	0.002395	0.013619	0.000105	168.49639	1228.5302	8.8455584	0.014206	0.010345225	0.009405774	0.02598	0.158097472	0.00617514
Vendor	HHDT		0.014263	0.004398	0.001099	0.0124406	1.78E-07	417.38345	807.56922	0.0052381	0.114481	0.059035557	3.43869E-08	0.067199	0.128848131	3.5548E-06
	MHD		0.007916	0.0015	0.001198	0.0068095	5.23E-05	84.248197	614.26511	4.4227792	0.007103	0.005172612	0.004702887	0.01299	0.079048736	0.00308757
		0.04499	0.022178	0.005898	0.002296	0.0192501	5.25E-05	501.63165	1421.8343	4.4280172	0.121584	0.064208169	0.004702921	0.080189	0.207896867	0.00309113
Worker	LDA		0.001237	0.001	0	0.0005579	0.000923	0	127.53038	33.200739	0	0.0010569	0.034921534	0	0.002194526	0.01585167
	LDT1		0.000779	0.0005	0	0.0004326	0.000701	0	82.262237	21.970034	0	0.001515655	0.028524883	0	0.002362982	0.01018141
	LDT2		0.000747	0.0005	0	0.0003055	0.000486	0	84.755798	21.768994	0	0.000681775	0.021187975	0	0.001501131	0.00949141
		0.04499	0.002762	0.002	0	0.0012959	0.00211	0	294.54841	76.939766	0	0.00325433	0.084634392	0	0.006058639	0.03552449

CalEEMod EMFAC2021 Emission Factors Input — Year 2024

Season	EmissionType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
A	CH4_IDLEX	0	0	0	0	0.005091	0.002896	0.014206	0.22896136	0.008876	0	0	0.073479	0
A	CH4_RUNEX	0.002114	0.006063	0.002727	0.004087	0.008572	0.007554	0.010345	0.118071114	0.013532	0.281021852	0.17822	0.120077	0.010715
A	CH4_STREX	0.069843	0.1141	0.084752	0.107923	0.021488	0.011345	0.009406	6.87739E-08	0.029201	0.026361422	0.19855	0.002802	0.025804
A	CO_IDLEX	0	0	0	0	0.186408	0.134147	0.694008	5.189925051	0.484177	0	0	1.28787	0
A	CO_RUNEX	0.660835	1.373577	0.799408	0.987539	0.880919	0.588973	0.398867	0.776396277	1.19071	3.315078728	14.15387	0.651451	0.977151
A	CO_STREX	3.146015	5.703688	3.722683	4.165913	1.959196	1.054213	1.170184	0.00053549	3.277633	2.230961981	8.307287	0.387214	2.309277
A	CO2_NBIO_IDLEX	0	0	0	0	8.969001	14.28531	168.4964	834.7668974	65.31404	0	0	181.2778	0
A	CO2_NBIO_RUNEX	255.0608	329.0489	339.0232	414.642	781.1716	830.4592	1228.53	1615.138438	1610.848	1281.509708	190.319	1039.924	1673.661
A	CO2_NBIO_STREX	66.40148	87.88013	87.07598	105.8929	16.44736	8.783669	8.845558	0.010476125	24.73572	21.04433967	51.99124	2.409291	21.74753
A	NOX_IDLEX	0	0	0	0	0.062105	0.106028	0.975137	4.103597706	0.250674	0	0	1.222261	0
A	NOX_RUNEX	0.039298	0.126319	0.065315	0.109925	0.876489	1.015962	1.20864	1.880488499	1.183775	0.292916603	0.622529	2.187886	1.639355
A	NOX_STREX	0.250052	0.411508	0.337328	0.45577	0.419696	0.223244	1.419127	2.711524951	0.695229	0.217465019	0.154855	0.533928	0.296977
A	PM10_IDLEX	0	0	0	0	0.000804	0.001451	0.002504	0.002302914	0.000293	0	0	0.000934	0
A	PM10_PMBW	0.007068	0.008903	0.008532	0.008753	0.077868	0.090836	0.045232	0.081501898	0.050098	0.116247365	0.012	0.044862	0.044944
A	PM10_PMTW	0.008	0.008	0.008	0.008	0.009615	0.010817	0.012	0.03518713	0.012	0.030536691	0.004	0.010864	0.013261
A	PM10_RUNEX	0.001212	0.00188	0.001328	0.001425	0.018724	0.027275	0.014244	0.02600939	0.018388	0.005209448	0.001905	0.011713	0.03573
A	PM10_STREX	0.002007	0.003049	0.002114	0.002203	0.000205	8.94E-05	0.000114	3.86836E-07	0.000214	0.000151371	0.003528	3.22E-05	0.00027
A	PM25_IDLEX	0	0	0	0	0.00077	0.001388	0.002395	0.002197519	0.00028	0	0	0.000893	0
A	PM25_PMBW	0.002474	0.003116	0.002986	0.003064	0.027254	0.031793	0.015831	0.028525664	0.017534	0.040686578	0.0042	0.015702	0.01573
A	PM25_PMTW	0.002	0.002	0.002	0.002	0.002404	0.002704	0.003	0.008796782	0.003	0.007634173	0.001	0.002716	0.003315
A	PM25_RUNEX	0.001116	0.00173	0.001222	0.001314	0.017877	0.026079	0.013619	0.024881102	0.017573	0.004975525	0.001784	0.011191	0.034143
A	PM25_STREX	0.001846	0.002804	0.001943	0.002026	0.000188	8.22E-05	0.000105	3.55682E-07	0.000197	0.00013918	0.003322	2.96E-05	0.000248
A	ROG_DIURN	0.306445	0.66359	0.297413	0.394107	0.120515	0.059696	0.030034	9.3011E-05	0.120744	0.037064573	4.350545	0.010489	30.74144
A	ROG_HTSK	0.090889	0.183166	0.084589	0.105844	0.031167	0.015477	0.007482	2.81847E-05	0.028602	0.0134673	3.594851	0.003139	8.058809
A	ROG_IDLEX	0	0	0	0	0.021312	0.015358	0.027971	0.33102935	0.045502	0	0	0.129756	0
A	ROG_RESTL	0	0	0	0	0	0	0	0	0	0	0	0	0
A	ROG_RUNEX	0.008118	0.026755	0.010541	0.017298	0.103875	0.131317	0.042688	0.018863993	0.088342	0.053444495	1.196001	0.041465	0.07716
A	ROG_RUNLS	0.233422	0.529483	0.224278	0.303961	0.171247	0.08244	0.061652	0.000252657	0.134841	0.027233085	3.818752	0.006863	0.186677
A	ROG_STREX	0.322734	0.59018	0.389385	0.540898	0.106183	0.055732	0.053264	3.73517E-07	0.156312	0.109673643	1.490348	0.015315	0.107029
A	SO2_IDLEX	0	0	0	0	8.71E-05	0.000137	0.001566	0.007315911	0.000623	0	0	0.001617	0
A	SO2_RUNEX	0.002521	0.003253	0.003351	0.004096	0.007617	0.007988	0.011657	0.014631936	0.01564	0.011439937	0.001881	0.009537	0.016406
A	SO2_STREX	0.000656	0.000869	0.000861	0.001047	0.000163	8.68E-05	8.74E-05	1.03567E-07	0.000245	0.000208045	0.000514	2.38E-05	0.000215
A	TOG_DIURN	0.306445	0.66359	0.297413	0.394107	0.120515	0.059696	0.030034	9.3011E-05	0.120744	0.037064573	0.108376	0.010489	30.74144
A	TOG_HTSK	0.090889	0.183166	0.084589	0.105844	0.031167	0.015477	0.007482	2.81847E-05	0.028602	0.0134673	3.594851	0.003139	8.058809
A	TOG_IDLEX	0	0	0	0	0.030081	0.020571	0.045887	0.591505769	0.061659	0	0	0.230782	0
A	TOG_RESTL	0	0	0	0	0	0	0	0	0	0	0	0	0
A	TOG_RUNEX	0.011824	0.039019	0.015365	0.025169	0.125873	0.152269	0.059106	0.139300936	0.117851	0.340864463	1.424317	0.166828	0.099828
A	TOG_RUNLS	0.233422	0.529483	0.224278	0.303961	0.171247	0.08244	0.061652	0.000252657	0.134841	0.027233085	3.818752	0.006863	0.186677
A	TOG_STREX	0.353353	0.646172	0.426328	0.592214	0.116257	0.061019	0.058317	4.08954E-07	0.171142	0.120078834	1.619841	0.016768	0.117183
A	N2O_IDLEX	0	0	0	0	0.000738	0.001817	0.02598	0.134397302	0.008188	0	0	0.025719	0
A	N2O_RUNEX	0.004389	0.009452	0.006005	0.009157	0.046713	0.088137	0.158097	0.257696262	0.114699	0.167521975	0.041803	0.135228	0.070166
A	N2O_STREX	0.031703	0.040726	0.037966	0.04249	0.033365	0.017606	0.006175	7.10954E-06	0.024289	0.021748481	0.008963	0.002921	0.031597

CalEEMod EMFAC2021 Fleet Mix Input

Year **2024**

FleetMixLandUseSubType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.50834	0.045239	0.219639	0.144443	0.02914	0.006601	0.008736	0.007705	0.000532	0.000481	0.024911	0.000726	0.003507
Unrefrigerated Warehouse-No Rail	0.50834	0.045239	0.219639	0.144443	0.02914	0.006601	0.008736	0.007705	0.000532	0.000481	0.024911	0.000726	0.003507

Attachment 4: Project Construction and Operation Health Risk Calculations

830 San Pablo Ave, Pinole, CA

DPM Emissions and Modeling Emission Rates - Unmitigated

Construction Year	Activity	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2023	Construction	0.0612	CON_DPM	122.5	0.02796	3.52E-03	29,885	1.18E-07
Total		***0.0612***		***122.5***	***0.0280***	***0.0035***		

Construction Hours		
hr/day =	12	(7am - 7pm)
days/yr =	365	
hours/year =	4380	

830 San Pablo Ave, Pinole, CA

PM2.5 Fugitive Dust Emissions for Modeling - Unmitigated

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2023	Construction	CON_FUG	0.0347	69.4	0.01585	2.00E-03	29,885	6.68E-08
Total			***0.0347***	***69.4***	***0.0159***	***0.0020***		

Construction Hours		
hr/day =	12	(7am - 7pm)
days/yr =	365	
hours/year =	4380	

DPM Construction Emissions and Modeling Emission Rates - With Mitigation

Construction Year	Activity	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	(lb/hr)	(g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2023	Construction	0.0074	CON_DPM	14.8	0.00337	4.25E-04	29,885	1.42E-08
Total		***0.0074***		***14.8***	***0.0034***	***0.0004***		

Construction Hours		
hr/day =	12	(7am - 7pm)
days/yr =	365	
hours/year =	4380	

PM2.5 Fugitive Dust Construction Emissions for Modeling - With Mitigation

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	(lb/yr)	(lb/hr)	(g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2023	Construction	CON_FUG	0.0158	31.6	0.00722	9.10E-04	29,885	3.05E-08
Total			***0.0158***	***31.6***	***0.0072***	***0.0009***		

Construction Hours		
hr/day =	12	(7am - 7pm)
days/yr =	365	
hours/year =	4380	

830 San Pablo Ave, Pinole, CA
Construction Health Impact Summary

Maximum Impacts at MEI Location - Without Mitigation

Emissions Year	Maximum Concentrations		Cancer Risk (per million)		Hazard Index	Maximum Annual PM2.5 Concentration
	Exhaust PM10/DPM ($\mu g/m^3$)	Fugitive PM2.5 ($\mu g/m^3$)	Infant/Child	Adult	(-)	($\mu g/m^3$)
2023	0.1632	0.1173	29.02	0.47	0.03	0.28
Total	-	-	**29.02**	**0.47**		-
Maximum	0.1632	0.1173	**-**	**-**	**0.03**	**0.28**

Maximum Impacts at MEI Location - With Mitigation

Emissions Year	Maximum Concentrations		Cancer Risk (per million)		Hazard Index	Maximum Annual PM2.5 Concentration
	Exhaust PM10/DPM ($\mu g/m^3$)	Fugitive PM2.5 ($\mu g/m^3$)	Infant/Child	Adult	(-)	($\mu g/m^3$)
2023	0.0196	0.0536	3.49	0.06	0.00	0.07
Total	-	-	**3.49**	**0.06**	-	-
Maximum	0.0196	0.0536	**-**	**-**	**0.00**	**0.07**

- Tier 4 interim engines and BMPs as Mitigation Measures.

830 San Pablo Ave, Pinole, CA - Construction Impacts - Without Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Off-Site MEI Location - 4.5 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

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

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

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

Values

	Infant/Child			Adult
Age -->	3rd Trimester	0 - 2	2 - 16	16 - 30
Parameter				
ASF =	10	10	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Information			Infant/Child	Adult - Exposure Information			Adult
	Exposure				Age	Cancer	Modeled		Age	Cancer
Exposure	Duration		DPM Conc (ug/m3)		Sensitivity	Risk	DPM Conc (ug/m3)		Sensitivity	Risk
Year	(years)	Age	Year	Annual	Factor	(per million)	Year	Annual	Factor	(per million)
0	0.25	-0.25 - 0*	2023	0.1499	10	2.04	2023	0.1499	-	-
1	1	0 - 1	2023	0.1499	10	24.62	2023	0.1499	1	0.43
2	1	1 - 2		0.0000	10	0.00		0.0000	1	0.00
3	1	2 - 3		0.0000	3	0.00		0.0000	1	0.00
4	1	3 - 4		0.0000	3	0.00		0.0000	1	0.00
5	1	4 - 5		0.0000	3	0.00		0.0000	1	0.00
6	1	5 - 6		0.0000	3	0.00		0.0000	1	0.00
7	1	6 - 7		0.0000	3	0.00		0.0000	1	0.00
8	1	7 - 8		0.0000	3	0.00		0.0000	1	0.00
9	1	8 - 9		0.0000	3	0.00		0.0000	1	0.00
10	1	9 - 10		0.0000	3	0.00		0.0000	1	0.00
11	1	10 - 11		0.0000	3	0.00		0.0000	1	0.00
12	1	11 - 12		0.0000	3	0.00		0.0000	1	0.00
13	1	12 - 13		0.0000	3	0.00		0.0000	1	0.00
14	1	13 - 14		0.0000	3	0.00		0.0000	1	0.00
15	1	14 - 15		0.0000	3	0.00		0.0000	1	0.00
16	1	15 - 16		0.0000	3	0.00		0.0000	1	0.00
17	1	16-17		0.0000	1	0.00		0.0000	1	0.00
18	1	17-18		0.0000	1	0.00		0.0000	1	0.00
19	1	18-19		0.0000	1	0.00		0.0000	1	0.00
20	1	19-20		0.0000	1	0.00		0.0000	1	0.00
21	1	20-21		0.0000	1	0.00		0.0000	1	0.00
22	1	21-22		0.0000	1	0.00		0.0000	1	0.00
23	1	22-23		0.0000	1	0.00		0.0000	1	0.00
24	1	23-24		0.0000	1	0.00		0.0000	1	0.00
25	1	24-25		0.0000	1	0.00		0.0000	1	0.00
26	1	25-26		0.0000	1	0.00		0.0000	1	0.00
27	1	26-27		0.0000	1	0.00		0.0000	1	0.00
28	1	27-28		0.0000	1	0.00		0.0000	1	0.00
29	1	28-29		0.0000	1	0.00		0.0000	1	0.00
30	1	29-30		0.0000	1	0.00		0.0000	1	0.00
Total Increased Cancer Risk						**26.66**				**0.43**

* Third trimester of pregnancy

	Maximum	
Hazard Index	Fugitive PM2.5	Total PM2.5
0.030	0.105	0.25

830 San Pablo Ave, Pinole, CA - Construction Impacts - Without Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction Impacts at Off-Site MEI Location - 1.5 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

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

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

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

Values

	Infant/Child			Adult
Age -->	3rd Trimester	0 - 2	2 - 16	16 - 30
Parameter				
ASF =	10	10	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Exposure Duration (years)	Age	Infant/Child - Exposure Information DPM Conc (ug/m3) Year	Annual	Age Sensitivity Factor	Infant/Child Cancer Risk (per million)	Adult - Exposure Information Modeled DPM Conc (ug/m3) Year	Annual	Age Sensitivity Factor	Adult Cancer Risk (per million)	Hazard Index	Maximum Fugitive PM2.5	Total PM2.5
0	0.25	-0.25 - 0*	2023	0.1632	10	2.22	2023	0.1632	-	-			
1	1	0 - 1	2023	0.1632	10	26.80	2023	0.1632	1	0.47	0.03	0.117	0.28
2	1	1 - 2		0.0000	10	0.00		0.0000	1	0.00			
3	1	2 - 3		0.0000	3	0.00		0.0000	1	0.00			
4	1	3 - 4		0.0000	3	0.00		0.0000	1	0.00			
5	1	4 - 5		0.0000	3	0.00		0.0000	1	0.00			
6	1	5 - 6		0.0000	3	0.00		0.0000	1	0.00			
7	1	6 - 7		0.0000	3	0.00		0.0000	1	0.00			
8	1	7 - 8		0.0000	3	0.00		0.0000	1	0.00			
9	1	8 - 9		0.0000	3	0.00		0.0000	1	0.00			
10	1	9 - 10		0.0000	3	0.00		0.0000	1	0.00			
11	1	10 - 11		0.0000	3	0.00		0.0000	1	0.00			
12	1	11 - 12		0.0000	3	0.00		0.0000	1	0.00			
13	1	12 - 13		0.0000	3	0.00		0.0000	1	0.00			
14	1	13 - 14		0.0000	3	0.00		0.0000	1	0.00			
15	1	14 - 15		0.0000	3	0.00		0.0000	1	0.00			
16	1	15 - 16		0.0000	3	0.00		0.0000	1	0.00			
17	1	16-17		0.0000	1	0.00		0.0000	1	0.00			
18	1	17-18		0.0000	1	0.00		0.0000	1	0.00			
19	1	18-19		0.0000	1	0.00		0.0000	1	0.00			
20	1	19-20		0.0000	1	0.00		0.0000	1	0.00			
21	1	20-21		0.0000	1	0.00		0.0000	1	0.00			
22	1	21-22		0.0000	1	0.00		0.0000	1	0.00			
23	1	22-23		0.0000	1	0.00		0.0000	1	0.00			
24	1	23-24		0.0000	1	0.00		0.0000	1	0.00			
25	1	24-25		0.0000	1	0.00		0.0000	1	0.00			
26	1	25-26		0.0000	1	0.00		0.0000	1	0.00			
27	1	26-27		0.0000	1	0.00		0.0000	1	0.00			
28	1	27-28		0.0000	1	0.00		0.0000	1	0.00			
29	1	28-29		0.0000	1	0.00		0.0000	1	0.00			
30	1	29-30		0.0000	1	0.00		0.0000	1	0.00			
Total Increased Cancer Risk						**29.02**				**0.47**			

* Third trimester of pregnancy

830 San Pablo Ave, Pinole, CA - Construction Impacts - With Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Off-Site MEI Location - 4.5 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

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

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

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

Values

	Infant/Child			Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
Parameter				
ASF =	10	10	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Information			Infant/Child	Adult - Exposure Information			Adult			
	Exposure				Age	Cancer	Modeled		Age	Cancer	Maximum		
Exposure	Duration		DPM Conc (ug/m3)		Sensitivity	Risk	DPM Conc (ug/m3)		Sensitivity	Risk	Hazard	Fugitive	Total
Year	(years)	Age	Year	Annual	Factor	(per million)	Year	Annual	Factor	(per million)	Index	PM2.5	PM2.5
0	0.25	-0.25 - 0*	2023	0.0180	10	0.25	2023	0.0180	-	-			
1	1	0 - 1	2023	0.0180	10	2.96	2023	0.0180	1	0.05	0.004	0.05	0.07
2	1	1 - 2		0.0000	10	0.00		0.0000	1	0.00			
3	1	2 - 3		0.0000	3	0.00		0.0000	1	0.00			
4	1	3 - 4		0.0000	3	0.00		0.0000	1	0.00			
5	1	4 - 5		0.0000	3	0.00		0.0000	1	0.00			
6	1	5 - 6		0.0000	3	0.00		0.0000	1	0.00			
7	1	6 - 7		0.0000	3	0.00		0.0000	1	0.00			
8	1	7 - 8		0.0000	3	0.00		0.0000	1	0.00			
9	1	8 - 9		0.0000	3	0.00		0.0000	1	0.00			
10	1	9 - 10		0.0000	3	0.00		0.0000	1	0.00			
11	1	10 - 11		0.0000	3	0.00		0.0000	1	0.00			
12	1	11 - 12		0.0000	3	0.00		0.0000	1	0.00			
13	1	12 - 13		0.0000	3	0.00		0.0000	1	0.00			
14	1	13 - 14		0.0000	3	0.00		0.0000	1	0.00			
15	1	14 - 15		0.0000	3	0.00		0.0000	1	0.00			
16	1	15 - 16		0.0000	3	0.00		0.0000	1	0.00			
17	1	16-17		0.0000	1	0.00		0.0000	1	0.00			
18	1	17-18		0.0000	1	0.00		0.0000	1	0.00			
19	1	18-19		0.0000	1	0.00		0.0000	1	0.00			
20	1	19-20		0.0000	1	0.00		0.0000	1	0.00			
21	1	20-21		0.0000	1	0.00		0.0000	1	0.00			
22	1	21-22		0.0000	1	0.00		0.0000	1	0.00			
23	1	22-23		0.0000	1	0.00		0.0000	1	0.00			
24	1	23-24		0.0000	1	0.00		0.0000	1	0.00			
25	1	24-25		0.0000	1	0.00		0.0000	1	0.00			
26	1	25-26		0.0000	1	0.00		0.0000	1	0.00			
27	1	26-27		0.0000	1	0.00		0.0000	1	0.00			
28	1	27-28		0.0000	1	0.00		0.0000	1	0.00			
29	1	28-29		0.0000	1	0.00		0.0000	1	0.00			
30	1	29-30		0.0000	1	0.00		0.0000	1	0.00			
Total Increased Cancer Risk						**3.21**				**0.05**			

* Third trimester of pregnancy

830 San Pablo Ave, Pinole, CA - Construction Impacts - With Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Off-Site MEI Location - 1.5 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

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

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

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

Values

	Infant/Child			Adult
Age -->	3rd Trimester	0 - 2	2 - 16	16 - 30
Parameter				
ASF =	10	10	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Information			Infant/Child	Adult - Exposure Information			Adult		Maximum	
	Exposure				Age	Cancer	Modeled		Age	Cancer			
Exposure	Duration		DPM Conc (ug/m3)		Sensitivity	Risk	DPM Conc (ug/m3)		Sensitivity	Risk	Hazard	Fugitive	Total
Year	(years)	Age	Year	Annual	Factor	(per million)	Year	Annual	Factor	(per million)	Index	PM2.5	PM2.5
0	0.25	-0.25 - 0*	2023	0.0196	10	0.27	2023	0.0196	-	-			
1	1	0 - 1	2023	0.0196	10	3.23	2023	0.0196	1	0.06	0.004	0.05	0.07
2	1	1 - 2		0.0000	10	0.00		0.0000	1	0.00			
3	1	2 - 3		0.0000	3	0.00		0.0000	1	0.00			
4	1	3 - 4		0.0000	3	0.00		0.0000	1	0.00			
5	1	4 - 5		0.0000	3	0.00		0.0000	1	0.00			
6	1	5 - 6		0.0000	3	0.00		0.0000	1	0.00			
7	1	6 - 7		0.0000	3	0.00		0.0000	1	0.00			
8	1	7 - 8		0.0000	3	0.00		0.0000	1	0.00			
9	1	8 - 9		0.0000	3	0.00		0.0000	1	0.00			
10	1	9 - 10		0.0000	3	0.00		0.0000	1	0.00			
11	1	10 - 11		0.0000	3	0.00		0.0000	1	0.00			
12	1	11 - 12		0.0000	3	0.00		0.0000	1	0.00			
13	1	12 - 13		0.0000	3	0.00		0.0000	1	0.00			
14	1	13 - 14		0.0000	3	0.00		0.0000	1	0.00			
15	1	14 - 15		0.0000	3	0.00		0.0000	1	0.00			
16	1	15 - 16		0.0000	3	0.00		0.0000	1	0.00			
17	1	16-17		0.0000	1	0.00		0.0000	1	0.00			
18	1	17-18		0.0000	1	0.00		0.0000	1	0.00			
19	1	18-19		0.0000	1	0.00		0.0000	1	0.00			
20	1	19-20		0.0000	1	0.00		0.0000	1	0.00			
21	1	20-21		0.0000	1	0.00		0.0000	1	0.00			
22	1	21-22		0.0000	1	0.00		0.0000	1	0.00			
23	1	22-23		0.0000	1	0.00		0.0000	1	0.00			
24	1	23-24		0.0000	1	0.00		0.0000	1	0.00			
25	1	24-25		0.0000	1	0.00		0.0000	1	0.00			
26	1	25-26		0.0000	1	0.00		0.0000	1	0.00			
27	1	26-27		0.0000	1	0.00		0.0000	1	0.00			
28	1	27-28		0.0000	1	0.00		0.0000	1	0.00			
29	1	28-29		0.0000	1	0.00		0.0000	1	0.00			
30	1	29-30		0.0000	1	0.00		0.0000	1	0.00			
Total Increased Cancer Risk						**3.49**				**0.06**			

* Third trimester of pregnancy

Attachment 5: Cumulative Risk Information and Calculations

PM2.5 Fugitive Dust Emissions for Modeling - Central Concrete

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2023	Operation	OPR_FUG	0.3440	687.9	0.15706	1.98E-02	22,858	8.66E-07
Total			***0.3440***	***687.9***	***0.1571***	***0.0198***		

DPM Emissions and Modeling Emission Rates - Project Site

Operational Year	Activity	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2024	Deliveries	0.0003	TRK_DPM	0.6	0.00013	1.68E-05	29,885	5.60E-10
Total		***0.0003***		***0.6***	***0.0001***	***0.0000***		

PM2.5 Fugitive Dust Emissions for Modeling - Project Site

Operational Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2024	Deliveries	TRK_FUG	0.0001	0.2	0.00005	6.73E-06	29,885	2.25E-10
Total			***0.0001***	***0.2***	***0.0001***	***0.0000***		

DPM Emissions and Modeling Emission Rates - Route to Project Site

Operational Year	Activity	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2024	Route	0.0002	TRK_DPM	0.3	0.00007	8.74E-06	47,296	1.85E-10
Total		***0.0002***		***0.3***	***0.0001***	***0.0000***		

PM2.5 Fugitive Dust Emissions for Modeling - Route to Project Site

Operational Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2024	Route	TRK_FUG	0.0001	0.1	0.00003	3.36E-06	47,296	7.11E-11
Total			***0.0001***	***0.1***	***0.0000***	***0.0000***		

DPM Emissions and Modeling Emission Rates - San Pablo Avenue

Operational Year	Activity	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2024	San Pablo	0.0002	TRK_DPM	0.4	0.00008	1.03E-05	99,448	1.04E-10
Total		***0.0002***		***0.4***	***0.0001***	***0.0000***		

PM2.5 Fugitive Dust Emissions for Modeling - San Pablo Avenue

Operational Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2024	San Pablo	TRK_FUG	0.0001	0.1	0.00003	4.04E-06	99,448	4.06E-11
Total			***0.0001***	***0.1***	***0.0000***	***0.0000***		

830 San Pablo Avenue, Pinole, CA - Project Operation
DPM Cancer Risks From Project Operation Sources
Maximum DPM Cancer Risk at Project MEI Receptor
1.5 Meter Receptor Heights

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

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

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

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

Values

Cancer Potency Factors $(mg/kg\text{-}day)^{-1}$

TAC	CPF
DPM	1.10E+00

	Infant/Child			Adult
Age --> Parameter	3rd Trimester	0 - <2	2 - <16	16 - 30
ASF	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
ED =	0.25	2	14	14
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

MEI Cancer Risk From Project Trucks
1.5 meter receptor height (2024-2052)

Exposure Duration (years)	Age	Age Sensitivity Factor	DPM Annual Conc (ug/m3)	DPM Cancer Risk (per million)	Hazard Index	Fugitive $PM_{2.5}$	Total $PM_{2.5}$
0	-0.25 - 0*	10	0.00078	0.00	0.00	0.004	0.005
1	1 - 2	10	0.00078	0.13			
14	3 - 16	3	0.00078	0.28			
14	17 - 30	1	0.00078	0.03			
Total Increased Cancer Risk				**0.442**			

* Third trimester of pregnancy

```
           File Name:   Local Roadways 2023.EF
CT-EMFAC2017 Version:   1.0.2.27401
            Run Date:   1/17/2023 11:04:51 AM
                Area:   Contra Costa (SF)
       Analysis Year:   2023
              Season:   Annual

=======================================================================

Vehicle Category        VMT Fraction           Diesel VMT Fraction     Gas VMT Fraction
                        Across Category        Within Category         Within Category
         Truck 1             0.017                  0.516                   0.484
         Truck 2             0.019                  0.934                   0.049
       Non-Truck             0.964                  0.014                   0.967

=======================================================================

              Road Type:       Major/Collector
     Silt Loading Factor:                 CARB         0.032 g/m2
Precipitation Correction:                 CARB         P = 60 days     N = 365 days

=======================================================================

Fleet Average Running Exhaust Emission Factors (grams/veh-mile)

       Pollutant Name        40 mph
                PM2.5      0.001421
                  TOG      0.027772
            Diesel PM      0.000414

=======================================================================

Fleet Average Running Loss Emission Factors (grams/veh-hour)

       Pollutant Name   Emission Factor
                  TOG          1.495775

=======================================================================

Fleet Average Tire Wear Factors (grams/veh-mile)

       Pollutant Name   Emission Factor
                PM2.5          0.002107

=======================================================================

Fleet Average Brake Wear Factors (grams/veh-mile)

       Pollutant Name   Emission Factor
                PM2.5          0.016830

=======================================================================

Fleet Average Road Dust Factors (grams/veh-mile)

       Pollutant Name   Emission Factor
                PM2.5          0.015049

=============================END=======================================
```

830 San Pablo Ave, Pinole, CA - Off-Site Residential
Cumulative Operation - San Pablo Avenue
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = 2023

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
DPM_EB_SPA	San Pablo Avenue Eastbound	EB	2	475.5	0.30	13.3	43.7	3.4	25	9,272
DPM_WB_SPA	San Pablo Avenue Westbound	WB	2	506.6	0.31	13.3	43.7	3.4	25	9,272
									Total	18,544

Emission Factors

Speed Category	1	2	3	4
Travel Speed (mph)	40			
Emissions per Vehicle (g/VMT)	0.00041			

Emisson Factors from CT-EMFAC2017

2023 Hourly Traffic Volumes and DPM Emissions - DPM_EB_SPA

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	3.56%	331	1.12E-05	9	7.35%	681	2.31E-05	17	6.52%	604	2.05E-05
2	2.53%	235	7.98E-06	10	6.58%	610	2.07E-05	18	4.73%	439	1.49E-05
3	3.00%	278	9.46E-06	11	5.75%	533	1.81E-05	19	2.37%	220	7.48E-06
4	3.00%	278	9.46E-06	12	6.13%	568	1.93E-05	20	1.06%	98	3.34E-06
5	2.06%	191	6.50E-06	13	5.47%	507	1.72E-05	21	2.73%	254	8.62E-06
6	2.91%	270	9.16E-06	14	5.47%	507	1.72E-05	22	3.58%	332	1.13E-05
7	6.67%	619	2.10E-05	15	4.53%	420	1.43E-05	23	2.27%	210	7.14E-06
8	5.76%	535	1.82E-05	16	5.00%	464	1.58E-05	24	0.95%	88	3.00E-06
								Total		9,272	

2023 Hourly Traffic Volumes Per Direction and DPM Emissions - DPM_WB_SPA

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	3.56%	331	1.20E-05	9	7.35%	681	2.47E-05	17	6.52%	604	2.19E-05
2	2.53%	235	8.50E-06	10	6.58%	610	2.21E-05	18	4.73%	439	1.59E-05
3	3.00%	278	1.01E-05	11	5.75%	533	1.93E-05	19	2.37%	220	7.97E-06
4	3.00%	278	1.01E-05	12	6.13%	568	2.06E-05	20	1.06%	98	3.56E-06
5	2.06%	191	6.93E-06	13	5.47%	507	1.84E-05	21	2.73%	254	9.18E-06
6	2.91%	270	9.76E-06	14	5.47%	507	1.84E-05	22	3.58%	332	1.20E-05
7	6.67%	619	2.24E-05	15	4.53%	420	1.52E-05	23	2.27%	210	7.60E-06
8	5.76%	535	1.93E-05	16	5.00%	464	1.68E-05	24	0.95%	88	3.20E-06
								Total		9,272	

830 San Pablo Ave, Pinole, CA - Off-Site Residential
Cumulative Operation - San Pablo Avenue
PM2.5 Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2023

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
PM2.5_EB_SPA	San Pablo Avenue Eastbound	EB	2	475.5	0.30	13.3	44	1.3	25	9,272
PM2.5_WB_SPA	San Pablo Avenue Westbound	WB	2	506.6	0.31	13.3	44	1.3	25	9,272
									Total	18,544

Emission Factors - PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	40			
Emissions per Vehicle (g/VMT)	0.001421			

Emisson Factors from CT-EMFAC2017

2023 Hourly Traffic Volumes and PM2.5 Emissions - PM2.5_EB_SPA

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.14%	106	1.23E-05	9	7.15%	663	7.73E-05	17	7.43%	689	8.04E-05
2	0.42%	39	4.51E-06	10	4.36%	404	4.72E-05	18	8.22%	762	8.89E-05
3	0.43%	40	4.65E-06	11	4.65%	431	5.03E-05	19	5.69%	527	6.15E-05
4	0.26%	24	2.79E-06	12	5.86%	544	6.34E-05	20	4.26%	395	4.61E-05
5	0.50%	46	5.40E-06	13	6.12%	567	6.62E-05	21	3.24%	300	3.50E-05
6	0.90%	84	9.77E-06	14	6.02%	558	6.51E-05	22	3.27%	304	3.54E-05
7	3.81%	354	4.12E-05	15	6.98%	647	7.54E-05	23	2.45%	227	2.65E-05
8	7.79%	722	8.42E-05	16	7.18%	666	7.76E-05	24	1.87%	173	2.02E-05
								Total		9,272	

2023 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - PM2.5_WB_SPA

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.14%	106	1.32E-05	9	7.15%	663	8.23E-05	17	7.43%	689	8.56E-05
2	0.42%	39	4.80E-06	10	4.36%	404	5.03E-05	18	8.22%	762	9.47E-05
3	0.43%	40	4.96E-06	11	4.65%	431	5.36E-05	19	5.69%	527	6.55E-05
4	0.26%	24	2.97E-06	12	5.86%	544	6.75E-05	20	4.26%	395	4.91E-05
5	0.50%	46	5.76E-06	13	6.12%	567	7.05E-05	21	3.24%	300	3.73E-05
6	0.90%	84	1.04E-05	14	6.02%	558	6.93E-05	22	3.27%	304	3.77E-05
7	3.81%	354	4.39E-05	15	6.98%	647	8.04E-05	23	2.45%	227	2.82E-05
8	7.79%	722	8.97E-05	16	7.18%	666	8.27E-05	24	1.87%	173	2.15E-05
								Total		9,272	

830 San Pablo Ave, Pinole, CA - Off-Site Residential
Cumulative Operation - San Pablo Avenue
TOG Exhaust Modeling - Roadway Links, Traffic Volumes, and TOG Exhaust Emissions
Year = 2023

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
TEXH_EB_SPA	San Pablo Avenue Eastbound	EB	2	475.5	0.30	13.3	44	1.3	25	9,272
TEXH_WB_SPA	San Pablo Avenue Westbound	WB	2	506.6	0.31	13.3	44	1.3	25	9,272
									Total	18,544

Emission Factors - TOG Exhaust

Speed Category	1	2	3	4
Travel Speed (mph)	40			
Emissions per Vehicle (g/VMT)	0.02777			

Emisson Factors from CT-EMFAC2017

2023 Hourly Traffic Volumes and TOG Exhaust Emissions - TEXH_EB_SPA

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.14%	106	2.41E-04	9	7.15%	663	1.51E-03	17	7.43%	689	1.57E-03
2	0.42%	39	8.81E-05	10	4.36%	404	9.22E-04	18	8.22%	762	1.74E-03
3	0.43%	40	9.09E-05	11	4.65%	431	9.83E-04	19	5.69%	527	1.20E-03
4	0.26%	24	5.46E-05	12	5.86%	544	1.24E-03	20	4.26%	395	9.01E-04
5	0.50%	46	1.06E-04	13	6.12%	567	1.29E-03	21	3.24%	300	6.84E-04
6	0.90%	84	1.91E-04	14	6.02%	558	1.27E-03	22	3.27%	304	6.92E-04
7	3.81%	354	8.06E-04	15	6.98%	647	1.47E-03	23	2.45%	227	5.18E-04
8	7.79%	722	1.65E-03	16	7.18%	666	1.52E-03	24	1.87%	173	3.95E-04
								Total		9,272	

2023 Hourly Traffic Volumes Per Direction and TOG Exhaust Emissions - TEXH_WB_SPA

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.14%	106	2.57E-04	9	7.15%	663	1.61E-03	17	7.43%	689	1.67E-03
2	0.42%	39	9.39E-05	10	4.36%	404	9.82E-04	18	8.22%	762	1.85E-03
3	0.43%	40	9.69E-05	11	4.65%	431	1.05E-03	19	5.69%	527	1.28E-03
4	0.26%	24	5.81E-05	12	5.86%	544	1.32E-03	20	4.26%	395	9.60E-04
5	0.50%	46	1.13E-04	13	6.12%	567	1.38E-03	21	3.24%	300	7.29E-04
6	0.90%	84	2.03E-04	14	6.02%	558	1.35E-03	22	3.27%	304	7.37E-04
7	3.81%	354	8.59E-04	15	6.98%	647	1.57E-03	23	2.45%	227	5.51E-04
8	7.79%	722	1.75E-03	16	7.18%	666	1.62E-03	24	1.87%	173	4.21E-04
								Total		9,272	

830 San Pablo Ave, Pinole, CA - Off-Site Residential
Cumulative Operation - San Pablo Avenue
TOG Evaporative Emissions Modeling - Roadway Links, Traffic Volumes, and TOG Evaporative Emissions
Year = 2023

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
TEVAP_EB_SPA	San Pablo Avenue Eastbound	EB	2	475.5	0.30	13.3	44	1.3	25	9,272
TEVAP_WB_SPA	San Pablo Avenue Westbound	WB	2	506.6	0.31	13.3	44	1.3	25	9,272
									Total	18,544

Emission Factors - PM2.5 - Evaporative TOG

Speed Category	1	2	3	4
Travel Speed (mph)	40			
Emissions per Vehicle per Hour (g/hour)	1.49578			
Emissions per Vehicle per Mile (g/VMT)	0.03739			

Emisson Factors from CT-EMFAC2017

2023 Hourly Traffic Volumes and TOG Evaporative Emissions - TEVAP_EB_SPA

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.14%	106	3.25E-04	9	7.15%	663	2.03E-03	17	7.43%	689	2.12E-03
2	0.42%	39	1.19E-04	10	4.36%	404	1.24E-03	18	8.22%	762	2.34E-03
3	0.43%	40	1.22E-04	11	4.65%	431	1.32E-03	19	5.69%	527	1.62E-03
4	0.26%	24	7.35E-05	12	5.86%	544	1.67E-03	20	4.26%	395	1.21E-03
5	0.50%	46	1.42E-04	13	6.12%	567	1.74E-03	21	3.24%	300	9.21E-04
6	0.90%	84	2.57E-04	14	6.02%	558	1.71E-03	22	3.27%	304	9.32E-04
7	3.81%	354	1.09E-03	15	6.98%	647	1.99E-03	23	2.45%	227	6.97E-04
8	7.79%	722	2.22E-03	16	7.18%	666	2.04E-03	24	1.87%	173	5.32E-04
								Total		9,272	

2023 Hourly Traffic Volumes Per Direction and TOG Evaporative Emissions - TEVAP_WB_SPA

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.14%	106	3.46E-04	9	7.15%	663	2.17E-03	17	7.43%	689	2.25E-03
2	0.42%	39	1.26E-04	10	4.36%	404	1.32E-03	18	8.22%	762	2.49E-03
3	0.43%	40	1.30E-04	11	4.65%	431	1.41E-03	19	5.69%	527	1.72E-03
4	0.26%	24	7.83E-05	12	5.86%	544	1.78E-03	20	4.26%	395	1.29E-03
5	0.50%	46	1.52E-04	13	6.12%	567	1.86E-03	21	3.24%	300	9.81E-04
6	0.90%	84	2.74E-04	14	6.02%	558	1.82E-03	22	3.27%	304	9.92E-04
7	3.81%	354	1.16E-03	15	6.98%	647	2.12E-03	23	2.45%	227	7.43E-04
8	7.79%	722	2.36E-03	16	7.18%	666	2.18E-03	24	1.87%	173	5.67E-04
								Total		9,272	

830 San Pablo Ave, Pinole, CA - Off-Site Residential
Cumulative Operation - San Pablo Avenue
Fugitive Road PM2.5 Modeling - Roadway Links, Traffic Volumes, and Fugitive Road PM2.5 Emissions
Year = 2023

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Length (mi)	Link Width (m)	Link Width (ft)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
FUG_EB_SPA	San Pablo Avenue Eastbound	EB	2	475.5	0.30	13.3	44	1.3	25	9,272
FUG_WB_SPA	San Pablo Avenue Westbound	WB	2	506.6	0.31	13.3	44	1.3	25	9,272
									Total	18,544

Emission Factors - Fugitive PM2.5

Speed Category	1	2	3	4
Travel Speed (mph)	40			
Tire Wear - Emissions per Vehicle (g/VMT)	0.00211			
Brake Wear - Emissions per Vehicle (g/VMT)	0.01683			
Road Dust - Emissions per Vehicle (g/VMT)	0.01505			
otal Fugitive PM2.5 - Emissions per Vehicle (g/VMT)	0.03399			

Emisson Factors from CT-EMFAC2017

2023 Hourly Traffic Volumes and Fugitive PM2.5 Emissions - FUG_EB_SPA

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	VPH	g/s
1	1.14%	106	2.95E-04	9	7.15%	663	1.85E-03	17	7.43%	689	1.92E-03
2	0.42%	39	1.08E-04	10	4.36%	404	1.13E-03	18	8.22%	762	2.13E-03
3	0.43%	40	1.11E-04	11	4.65%	431	1.20E-03	19	5.69%	527	1.47E-03
4	0.26%	24	6.68E-05	12	5.86%	544	1.52E-03	20	4.26%	395	1.10E-03
5	0.50%	46	1.29E-04	13	6.12%	567	1.58E-03	21	3.24%	300	8.37E-04
6	0.90%	84	2.34E-04	14	6.02%	558	1.56E-03	22	3.27%	304	8.47E-04
7	3.81%	354	9.86E-04	15	6.98%	647	1.80E-03	23	2.45%	227	6.33E-04
8	7.79%	722	2.01E-03	16	7.18%	666	1.86E-03	24	1.87%	173	4.84E-04
								Total		9,272	

2023 Hourly Traffic Volumes Per Direction and Fugitive PM2.5 Emissions - FUG_WB_SPA

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.14%	106	3.15E-04	9	7.15%	663	1.97E-03	17	7.43%	689	2.05E-03
2	0.42%	39	1.15E-04	10	4.36%	404	1.20E-03	18	8.22%	762	2.26E-03
3	0.43%	40	1.19E-04	11	4.65%	431	1.28E-03	19	5.69%	527	1.57E-03
4	0.26%	24	7.11E-05	12	5.86%	544	1.62E-03	20	4.26%	395	1.17E-03
5	0.50%	46	1.38E-04	13	6.12%	567	1.69E-03	21	3.24%	300	8.92E-04
6	0.90%	84	2.49E-04	14	6.02%	558	1.66E-03	22	3.27%	304	9.02E-04
7	3.81%	354	1.05E-03	15	6.98%	647	1.92E-03	23	2.45%	227	6.75E-04
8	7.79%	722	2.15E-03	16	7.18%	666	1.98E-03	24	1.87%	173	5.15E-04
								Total		9,272	

830 San Pablo Ave, Pinole, CA - San Pablo Avenue Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
at Construction Residential MEI Receptor (1.5 meter receptor height)

Emission Year	2023
Receptor Information	Construction Residential MEI receptor
Number of Receptors	1
Receptor Height	1.5 meters
Receptor Distances	At Construction Residential MEI location

Meteorological Conditions

BAAQMD Conoco Phillips Hillcrest Met	2013-2017
Land Use Classification	Urban
Wind Speed	Variable
Wind Direction	Variable

Construction Residential MEI Cancer Risk Maximum Concentrations

Meteorological Data Years	Concentration (μg/m3)*		
	DPM	Exhaust TOG	Evaporative TOG
2013-2017	0.0002	0.0113	0.0152

Construction Residential MEI PM2.5 Maximum Concentrations

Meteorological Data Years	PM2.5 Concentration (μg/m3)*		
	Total PM2.5	Fugitive PM2.5	Vehicle PM2.5
2013-2017	0.0144	0.0139	0.0006

830 San Pablo Ave, Pinole, CA - San Pablo Avenue Traffic Cancer Risk
Impacts at Construction Residential MEIs - 1.5 meter receptor height
30 Year Residential Exposure

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

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

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

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

Cancer Potency Factors $(mg/kg\text{-}day)^{-1}$

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

Values

	Infant/Child			Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
Parameter				
ASF =	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Maximum - Exposure Information					Concentration (ug/m3)			Cancer Risk (per million)			
Exposure Year	Exposure Duration (years)	Age	Year	Age Sensitivity Factor	DPM	Exhaust TOG	Evaporative TOG	DPM	Exhaust TOG	Evaporative TOG	TOTAL
0	0.25	-0.25 - 0*	2023	10	0.0002	0.0113	0.0152	0.003	0.001	0.0001	0.00
1	1	0 - 1	2023	10	0.0002	0.0113	0.0152	0.031	0.011	0.0008	0.04
2	1	1 - 2	2024	10	0.0002	0.0113	0.0152	0.031	0.011	0.0008	0.04
3	1	2 - 3	2025	3	0.0002	0.0113	0.0152	0.005	0.002	0.0001	0.01
4	1	3 - 4	2026	3	0.0002	0.0113	0.0152	0.005	0.002	0.0001	0.01
5	1	4 - 5	2027	3	0.0002	0.0113	0.0152	0.005	0.002	0.0001	0.01
6	1	5 - 6	2028	3	0.0002	0.0113	0.0152	0.005	0.002	0.0001	0.01
7	1	6 - 7	2029	3	0.0002	0.0113	0.0152	0.005	0.002	0.0001	0.01
8	1	7 - 8	2030	3	0.0002	0.0113	0.0152	0.005	0.002	0.0001	0.01
9	1	8 - 9	2031	3	0.0002	0.0113	0.0152	0.005	0.002	0.0001	0.01
10	1	9 - 10	2032	3	0.0002	0.0113	0.0152	0.005	0.002	0.0001	0.01
11	1	10 - 11	2033	3	0.0002	0.0113	0.0152	0.005	0.002	0.0001	0.01
12	1	11 - 12	2034	3	0.0002	0.0113	0.0152	0.005	0.002	0.0001	0.01
13	1	12 - 13	2035	3	0.0002	0.0113	0.0152	0.005	0.002	0.0001	0.01
14	1	13 - 14	2036	3	0.0002	0.0113	0.0152	0.005	0.002	0.0001	0.01
15	1	14 - 15	2037	3	0.0002	0.0113	0.0152	0.005	0.002	0.0001	0.01
16	1	15 - 16	2038	3	0.0002	0.0113	0.0152	0.005	0.002	0.0001	0.01
17	1	16-17	2039	1	0.0002	0.0113	0.0152	0.001	0.000	0.0000	0.00
18	1	17-18	2040	1	0.0002	0.0113	0.0152	0.001	0.000	0.0000	0.00
19	1	18-19	2041	1	0.0002	0.0113	0.0152	0.001	0.000	0.0000	0.00
20	1	19-20	2042	1	0.0002	0.0113	0.0152	0.001	0.000	0.0000	0.00
21	1	20-21	2043	1	0.0002	0.0113	0.0152	0.001	0.000	0.0000	0.00
22	1	21-22	2044	1	0.0002	0.0113	0.0152	0.001	0.000	0.0000	0.00
23	1	22-23	2045	1	0.0002	0.0113	0.0152	0.001	0.000	0.0000	0.00
24	1	23-24	2046	1	0.0002	0.0113	0.0152	0.001	0.000	0.0000	0.00
25	1	24-25	2047	1	0.0002	0.0113	0.0152	0.001	0.000	0.0000	0.00
26	1	25-26	2048	1	0.0002	0.0113	0.0152	0.001	0.000	0.0000	0.00
27	1	26-27	2049	1	0.0002	0.0113	0.0152	0.001	0.000	0.0000	0.00
28	1	27-28	2050	1	0.0002	0.0113	0.0152	0.001	0.000	0.0000	0.00
29	1	28-29	2051	1	0.0002	0.0113	0.0152	0.001	0.000	0.0000	0.00
30	1	29-30	2052	1	0.0002	0.0113	0.0152	0.001	0.000	0.0000	0.00
Total Increased Cancer Risk								0.14	0.048	0.004	**0.19**

* Third trimester of pregnancy

Hazard Index	Maximum Fugitive PM2.5	Total PM2.5
0.00004	0.01	0.01

Summary of Truck Delivery Emissions (EMFAC2021)

Pollutants YEAR	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	NBio- CO2	CH4	N2O	CO2e
	Tons										*Metric Tons*			
Project Site Travel (0.5 mile trip length)														
2024	0.0138	0.3129	0.2251	0.0006	0.0060	0.0030	0.0090	0.0009	0.0013	0.0023	60.1099	0.0105	0.0096	63.2446
Road to Project Site (0.25 mile trip length)														
2024	0.0136	0.2939	0.2172	0.0004	0.0030	0.0015	0.0045	0.0005	0.0007	0.0012	45.3314	0.0095	0.0073	47.7365
San Pablo Ave (0.30 mile trip length)														
2024	0.0136	0.2977	0.2188	0.0005	0.0036	0.0018	0.0054	0.0005	0.0008	0.0014	48.2871	0.0097	0.0077	50.8381
Criteria Pollutant (20 mile trip length)														
2024	0.0286	1.7923	0.8359	0.0121	0.2413	0.1152	0.3565	0.0363	0.0503	0.0866	1212.8342	0.0948	0.1936	1272.8831

CalEEMod Construction Inputs

Phase	CalEEMod WORKER TRIPS	CalEEMod VENDOR TRIPS	Total Worker Trips	Total Vendor Trips	CalEEMod HAULING TRIPS	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class	*Worker VMT*	*Vendor VMT*	*Hauling VMT*
Deliveries	0	18	0	4716	0	0	0.5	0	LD_Mix	HDT_Mix	HHDT	0	2358	0

Number of Days Per Year					
2024	1/1/24	12/31/24	366	262	
			366	**262**	***Total Workdays***

Phase	Start Date	End Date	Days/Week	Workdays
Deliveries	1/1/2024	12/31/2024	5	262

CalEEMod Construction Inputs

Phase	CalEEMod WORKER TRIPS	CalEEMod VENDOR TRIPS	Total Worker Trips	Total Vendor Trips	CalEEMod HAULING TRIPS	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class	*Worker VMT*	*Vendor VMT*	*Hauling VMT*
Deliveries	0	18	0	4716	0	0	0.25	0	LD_Mix	HDT_Mix	HHDT	0	1179	0

Number of Days Per Year					
2024	1/1/24	12/31/24	366	262	
			366	**262**	***Total Workdays***

Phase	**Start Date**	**End Date**	**Days/Week**	**Workdays**
Deliveries	1/1/2024	12/31/2024	5	262

CalEEMod Construction Inputs

Phase	CalEEMod WORKER TRIPS	CalEEMod VENDOR TRIPS	Total Worker Trips	Total Vendor Trips	CalEEMod HAULING TRIPS	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class	*Worker VMT*	*Vendor VMT*	*Hauling VMT*
Deliveries	0	18	0	4716	0	0	0.3	0	LD_Mix	HDT_Mix	HHDT	0	1414.8	0

Number of Days Per Year					
2024	1/1/24	12/31/24	366	262	
			366	**262**	***Total Workdays***

Phase	Start Date	End Date	Days/Week	Workdays
Deliveries	1/1/2024	12/31/2024	5	262

CalEEMod Construction Inputs

Phase	CalEEMod WORKER TRIPS	CalEEMod VENDOR TRIPS	Total Worker Trips	Total Vendor Trips	CalEEMod HAULING TRIPS	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class	*Worker VMT*	*Vendor VMT*	*Hauling VMT*
Deliveries	0	0	0	0	36600	0	0	20	LD_Mix	HDT_Mix	HHDT	0	0	732000

Number of Days Per Year					
2024	1/1/24	12/31/24	366	262	
			366	**262**	***Total Workdays***

Phase	**Start Date**	**End Date**	**Days/Week**	**Workdays**
Deliveries	1/1/2024	12/31/2024	5	262


12.950788


0.018637

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Risk & Hazard Stationary Source Inquiry Form

This form is required when users request stationary source data from BAAQMD

This form is to be used with the BAAQMD's Google Earth stationary source screening tables.

Click here for guidance on coducting risk & hazard screening, including roadways & freeways, refer to the District's Risk & Hazard Analysis flow chart.

Click here for District's Recommended Methods for Screening and Modeling Local Risks and Hazards document.

Table A: Requester Contact Information

Date of Request	**1/13/2023**
Contact Name	Jordyn Bauer
Affiliation	Illingworth & Rodkin, Inc.
Phone	707-794-0400 x103
Email	jbauer@illingworthrodkin.com
Project Name	Pinole Shores
Address	848 San Pablo Ave
City	Pinole
County	Contra Costa
Type (residential, commercial, mixed use, industrial, etc.)	Industrial
Project Size (# of units or building square feet)	117,943
Comments:	

For Air District assistance, the following steps must be completed:

1. Complete all the contact and project information requested in **Table A** ncomplete forms will not be processed. Please include a project site map.

2. Download and install the free program Google Earth, **http://www.google.com/earth/download/ge/,** and then download the county specific Google Earth stationary source application files from the District's website, **http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx.** The small points on the map represent stationary sources permitted by the District (Map A on right). These permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc. Click on a point to view the source's Information Table, including the name, location, and preliminary estimated cancer risk, hazard index, and PM2.5 concentration.

3. Find the project site in Google Earth by inputting the site's address in the Google Earth search box.

4. Identify stationary sources within at least a 1000ft radius of project site. Verify that the location of the source on the map matches with the source's address in the Information Table, by using the Google Earth address search box to confirm the source's address location. Please report any mapping errors to the District.

5. List the stationary source information in **Table B** lue section only.

6. Note that a small percentage of the stationa... ...ve Health Risk Screening Assessment (HRSA) data INSTEAD of screening level data. These sources will be noted by an asterisk next to the Plant Name (Map B on right). If HRSA values are presented, these values have already been modeled and cannot be adjusted further.

7. Email this completed form to District staff. District staff will provide the most recent risk, hazard, and PM2.5 data that are available for the source(s). If this information or data are not available, source emissions data will be provided. Staff will respond to inquiries within three weeks.

Note that a public records request received for the same stationary source information will cancel the processing of your SSIF request.

Submit forms, maps, and questions to Matthew Hanson at 415-749-8733, or mhanson@baaqmd.gov

Table B: Google Earth data

Project MEI

Distance from Receptor (feet) or MEI[1]	Plant No.	Facility Name	Address	Cancer Risk[2]	Hazard Risk[2]	$PM_{2.5}$[2]	Source No.[3]	Type of Source[4]	Fuel Code[5]	Status/Comments	Distance Adjustment Multiplier	Adjusted Cancer Risk Estimate	Adjusted Hazard Risk	Adjusted PM2.5
955	14312	Crocketts Premier Auto Body	900 San Pablo Ave	0	0.0032804	0		No Data		2020 Dataset	0.14	0.00	0.00046	0.0000
850	24845	Central Concrete Pinole Plant	800 San Pablo Ave	0	0	5.886679		No Data		2020 Dataset	0.18	0.00	0.00000	1.0419
1000+	108694_1	Western Contra Costa Transit /	601 Walter Ave	0.68	0.0032351	0		Gas Dispensing Facility		2020 Dataset	0.02	0.01	0.000	0.0000

Footnotes:

1. Maximally exposed individual
2. These Cancer Risk, Hazard Index, and PM2.5 columns represent the values in the Google Earth Plant Information Table.
3. Each plant may have multiple permits and sources.
4. Permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc.
5. Fuel codes: 98 = diesel, 189 = Natural Gas.
6. If a Health Risk Screening Assessment (HRSA) was completed for the source, the application number will be listed here.

8. Engineer who completed the HRSA. For District purposes only.
9. All HRSA completed before 1/5/2010 need to be multiplied by an age sensitivity factor of 1.7.
10. The HRSA "Chronic Health" number represents the Hazard Index.
11. Further information about common sources:
    a. Sources that only include diesel internal combustion engines can be adjusted using the BAAQMD's Diesel Multiplier worksheet.
    b. The risk from natural gas boilers used for space heating when <25 MM BTU/hr would have an estimated cancer risk of one in a million or less, and a chronic hazard index of 0.003 or
    c. BAAQMD Reg 11 Rule 16 required that all co-residential (sharing a wall, floor, ceiling or is in the same building as a residential unit) dry cleaners cease use of perc on July 1, 2010.
    Therefore, there is no cancer risk, hazard or PM2.5 concentrations from co-residential dry cleaning businesses in the BAAQMD.
    d. Non co-residential dry cleaners must phase out use of perc by Jan. 1, 2023. Therefore, the risk from these dry cleaners does not need to be factored in over a 70-year period, but instead should reflect
    e. Gas stations can be adjusted using BAAQMD's Gas Station Distance Mulitplier worksheet.
    f. Unless otherwise noted, exempt sources are considered insignificant. See BAAQMD Reg 2 Rule 1 for a list of exempt sources.
    g. This spray booth is considered to be insignificant.

Date last updated:
03/13/2018

Screening Report

Area of Interest (AOI) Information

Area : 6,480,930.11 ft²

Sep 9 2022 15:03:43 Pacific Daylight Time

Permitted Stationary Sources

1:9,028

0 0.05 0.1 0.2 mi

0 0.07 0.15 0.3 km

Summary

Name	Count	Area(ft²)	Length(ft)
Permitted Stationary Sources	3	N/A	N/A

Permitted Stationary Sources

#	FacID	FacName	Address	City	Street
1	14312	Crocketts Premier Auto Body	900 San Pablo Ave	Pinole	CA
2	24845	Central Concrete Pinole Plant	800 San Pablo Ave	Pinole	CA
3	108694_1	Western Contra Costa Transit Authority	601 Walter Ave	Pinole	CA

#	Zip	County	Latitude	Longitude	Details
1	94,564.00	Contra Costa	38.01	-122.31	*No Data*
2	94,564.00	Contra Costa	38.00	-122.31	*No Data*
3	94,564.00	Contra Costa	38.01	-122.31	Gas Dispensing Facility

#	NAICS	Sector	Sub_Sector	Industry	ChronicHI
1	811,121.00	Other Services (except Public Administration)	Repair and Maintenance	Automotive Body, Paint, and Interior Repair and Maintenance	0.0032804
2	327,320.00	Manufacturing	Nonmetallic Mineral Product Manufacturing	Ready-Mix Concrete Manufacturing	0.0000000
3	485,119.00	Transportation and Warehousing	Transit and Ground Passenger Transportation	Other Urban Transit Systems	0.0032351

#	PM2_5	Cancer Risk {expression/expr0}	Chronic Hazard Index {expression/expr1}	PM2.5 {expression/expr2}	Count
1	0.0000000	*No Data*	0.003	*No Data*	1
2	5.8866787	*No Data*	*No Data*	5.887	1
3	0.0000000	0.675	0.003	*No Data*	1

NOTE: A larger buffer than 1000 feet may be warranted depending on proximity to significant sources.