# *ELM TREE STATION GAS STATION HEALTH RISK ASSESSMENT*

## *874 N. Wright Road, Santa Rosa, California*

**Executive Summary**

Potential health risk impacts associated with the construction and operation of a neighborhood commercial development that includes a gas station located at 874 N. Wright Road in Santa Rosa were assessed. Toxic air contaminants that could be emitted from this project primarily include diesel exhaust from construction and traffic and gasoline vapors, primarily benzene, from transfer and storage of gasoline. This health risk assessment predicted increased cancer risk from the Project to be below thresholds of significance recommended by the Bay Area Air Quality Management District (BAAQMD). Other health risk thresholds for increase hazard index and annual fine particulate matter ($PM_{2.5}$) concentrations would not be exceeded.

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# Introduction

The purpose of this report is to address the potential health risk impacts associated with the construction and operation of a proposed neighborhood commercial development that includes a gas station located at 874 N. Wright Road in Santa Rosa, California. The air quality impacts from this project would be associated with construction and operation of the gas station. Air pollutant emissions associated with the project were predicted using appropriate computer models. In addition, the potential health risk impacts from existing toxic air contaminant (TAC) sources affecting the nearby 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 consists of a solar-powered (pumps) fueling station, electric vehicle charging area, neighborhood fresh food market and one-bedroom apartment (0.73-acre parcel). The Project includes a privately owned and maintained park for public use with a small retail building selling coffee, ice cream etc., picnic tables, bicycle racks and a small shelter (0.25-cre parcel). The Project includes a connection to the Joe Rodota trail that will provide an alternative route along the back of the park parcel thereby eliminating any potential conflict with entrance and exit from the neighborhood commercial parcel.

The Project includes a 6-pump, 12-fueling position gas station that would also dispense diesel fuel. The amount of throughput for the gas dispensing facility (GDF) would be 438,000 gallons of unleaded gas and 150,000 gallons of diesel gas annually. The building would be a total of 3,450 square-feet (sf) with an 806-sf apartment above the market and there would be 16 parking spaces, including 4 EV parking spaces.

## Setting

The project is located in the portion of Sonoma County that 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 ($PM_{2.5}$).

<u>Air Pollutants of Concern</u>

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.

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

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 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

Toxic air contaminants (TAC) are a broad class of compounds known to cause morbidity or mortality, often because they cause cancer. 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.

*DPM*

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. Health risks from TACs are estimated using the Office of Environmental Health Hazard Assessment (OEHHA) risk assessment guidelines, which were published in February of 2015.[2] See *Attachment 1* for a detailed description of the health risk modeling methodology used in this assessment.

*Non-Diesel Total Organic Gases*

Gasoline-powered vehicles, particularly light-duty autos and trucks, emit TACs mostly in the form of total organic gases (TOG). TOG emissions associated with these types of vehicles occur primarily in two forms: running exhaust and evaporative running losses. Additional TOG emissions occur when starting a vehicle, especially cold vehicles. Mobile source TOG includes TACs. Emissions of these TACs are controlled through requirements of motor vehicle exhaust systems and the formulation of gasoline by the U.S. EPA and CARB

CARB has identified seven TACs of primary concern in gasoline as benzene, ethyl benzene, n-hexane, propylene, naphthalene, xylenes, and toluene.[3] Cancer risks are associated with three of

[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.
[3] CARB. 2022. *Gasoline Service Station Industrywide Risk Assessment Technical Guidance*. February 18, 2022.

these TACs (benzene, ethyl benzene, and naphthalene), all seven of these TACs cause non-cancer chronic (long term) health effects, and three of the TACs (benzene, toluene, and xylenes) cause non-cancer acute (short term) health effects.

Organic TAC emissions from fuel use are regulated in numerous ways that include standards for the formulation of gasoline, vehicle emission standards, and vapor control systems for storage, fuel dispensing facilities and vehicle on-board fuel systems.

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 single-family residents to the east and south of the site as well as those to the north across State Route 12 (S.R. 12).The Project would include a single apartment residence.

## Regulatory Setting

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 National Ambient Air Quality Standards and California Ambient Air Quality Standards. 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.[4] 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 being implemented in three

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

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. Throughout the program, information derived from the technical analyses will be 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: 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.[5] The project site is not located in a CARE area or within an overburdened area as identified by CalEnviroScreen as the Project site is scored at the 62nd percentile.[6]

The BAAQMD California Environmental Quality Act (*CEQA) Air Quality Guidelines*[7] 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 air toxics, odors, and greenhouse gas emissions. *Attachment 1* includes detailed health risk modeling methodology.

The Project is subject to BAAQMD permitting requirements. All gasoline dispensing facilities are required to have a Permit to Operate from the District, in accordance with Regulation 8 Rule 7 and include Phase I (vapor recovery during transfer of gasoline between any cargo tank and any stationary tank at GDF) and Phase II (vapor recovery during motor vehicle refueling operations from any stationary tank at GDF) systems. Projects involving modifications must be authorized by BAAQMD prior to construction. This includes the replacement or installation of tanks and/or vapor recovery lines, dispenser modifications and the addition of nozzles to a facility. For approval, the project must meet the toxic screening requirements listed in Regulation 2-5. Based on the results of that screening, BAAQMD may impose limits on gasoline throughput for the facility.

*City of Santa Rosa 2035 General Plan*

The Santa Rosa 2035 General Plan includes goals, policies, and actions to reduce exposure of the City's sensitive population to exposure of air pollution, toxic air contaminants, and GHG emissions. The following goals, policies, and actions are applicable to the proposed project:

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[5] 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.

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

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

*Air Quality*

OSC-J-1: Review all new construction projects and require dust abatement actions as contained in the CEQA Handbook of the Bay Area Air Quality Management District.

OSC-J-3: Reduce particulate matter emissions from wood burning appliances through implementation of the city's Wood Burning Appliance code.

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. In 2017, BAAQMD updated its CEQA Air Quality Guidelines and included revised significance thresholds. In 2022, BAAQMD revised its GHG thresholds, eliminating quantified emissions limits. The current BAAQMD thresholds were used in this analysis and are summarized in Table 1. Air quality impacts and community health risks are considered potentially significant if they exceed these thresholds.

**Table 1. BAAQMD CEQA Significance Thresholds**

| 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 |
| Annual $PM_{2.5}$ Concentration | 0.3µg/m$^3$ | 0.8µg/m$^3$ |
| Note: $PM_{2.5}$ = fine particulate matter or particulates with an aerodynamic diameter of 2.5µm or less. | | |

## Health Risk Impacts and Mitigation Measures

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

Project construction activity would generate dust and equipment exhaust that would affect nearby sensitive receptors. The project would have TAC emissions from the gasoline station and the generated traffic. 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 that includes the project contribution.

### Community Risk Methodology

Health risk impacts were addressed by predicting increased cancer risk, the increase in annual $PM_{2.5}$ concentrations and 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, the GDF, 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,[8] with the sensitive receptors being exposed to both project construction and operation emissions during this timeframe.

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 for 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 community 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.

<u>Modeled Sensitive Receptors</u>

Receptors for this assessment included locations where sensitive populations closest to the project would be present for extended periods of time (i.e., chronic exposures). This includes the existing residences to the surrounding of the 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. While there are additional sensitive receptors within 1,000 feet of the project site, the receptors chosen are adequate to identify maximum impacts from the project.

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

Health Risk from Project Construction

Construction equipment and associated heavy-duty truck traffic generates diesel exhaust, which is a known TAC. These exhaust air pollutant emissions would not be considered to contribute substantially to existing or projected air quality violations. Construction exhaust emissions may still pose health risks for sensitive receptors such as surrounding residents. The primary community risk impacts associated with construction emissions are cancer risk and exposure to $PM_{2.5}$. Diesel exhaust (i.e., DPM) poses both a potential health and nuisance impact to nearby receptors. 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 $PM_{2.5}$.[9] This assessment included dispersion modeling to predict the off-site concentrations resulting from project construction, so that increased cancer risks and non-cancer health effects could be evaluated.

*CalEEMod Emissions Modeling*

The California Emissions Estimator Model (CalEEMod) Online Version 2022.1 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 CalEEMod model output along with construction inputs are included in *Attachment 2*.

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 (sf) | Acreage |
|---|---|---|---|---|
| Gasoline/Service Station | 3.00 | Pumps | 3,271 | 0.32 |

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 information generated using CalEEMod defaults for a project of this type and size.

Within each of the CalEEMod construct phases, the quantity of equipment to be used along with the average hours per day and total number of workdays were based on CalEEMod defaults. The construction schedule assumed that the earliest possible start date would be June 2023 and would be completed over a period of approximately 11 months.

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 estimate of soil material imported and/or exported to the site, and the estimate of concrete and asphalt truck trips. CalEEMod provides daily estimates

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

of worker and vendor trips for each applicable phase. The total trips for worker and vendor trips were computed by multiplying the daily trip rate by the number of days in that phase. Haul trips for soil import/export were estimated by CalEEMod using the estimated grading volumes provided.[10]

The CalEEMod model provided total annual $PM_{10}$ (assumed to be diesel particulate matter) and $PM_{2.5}$ exhaust emissions for the off-road construction equipment and for exhaust emissions from on-road vehicles (haul trucks, vendor trucks, and worker vehicles). Over the 2023 and 2024 construction periods the total DPM exhaust emissions, represented by $PM_{10}$ exhaust, would be 0.05 tons (100 pounds). The construction DPM emissions include on-road emissions resulting from haul truck travel during grading activities, worker travel, and vendor deliveries during building construction, with overall trip lengths of one mile to simulate travel on and near the site. Fugitive $PM_{2.5}$ dust emissions were calculated by CalEEMod as 100 pounds for the overall construction period. The CalEEMod model output with emission calculations are provided in *Attachment 2*.

*Dispersion Modeling*

The U.S. EPA AERMOD dispersion model was used to predict DPM and $PM_{2.5}$ concentrations at existing sensitive receptors in the project vicinity. The AERMOD modeling utilized two area sources to represent the on-site construction emissions, one for DPM exhaust emissions and one for fugitive $PM_{2.5}$ dust emissions. Area sources were used to represent the locations of on-site construction activities. Emissions were distributed evenly across the area sources. To represent the construction equipment exhaust emissions, an emission release height of 6 meters (20 feet) was used for the area sources. The elevated source height reflects the height of the equipment exhaust pipes and buoyancy of the exhaust plume. For modeling fugitive $PM_{2.5}$ emissions, a near ground level release height of 2 meters (6 feet) was used for the area sources. Emissions from on-road truck travel were included in the area sources. Emissions were modeled as occurring daily between 7 am - 4 pm, when the majority of construction activity would occur. *Figure 1* shows the project site and nearby sensitive receptor locations where health impacts were evaluated.

The model used a 5-year data set (2013-2017) of hourly meteorological data from the Sonoma County Airport prepared for use with the AERMOD model by the BAAQMD. Annual DPM concentrations from construction activities were calculated for 2023 and 2024 with the annual average concentrations based on the 5-year average concentrations from modeling 5 years of meteorological data. DPM concentrations were calculated at nearby residential receptors using receptor heights of 1.5 meters (5 feet) to represent the breathing heights of residents in the nearby single-family homes.

*Construction Cancer Risk and Hazards*

The maximum-modeled unmitigated (uncontrolled) annual DPM concentration occurred at a residential receptor south of the project site near the corner of N. Wright and Sebastopol Roads. The location where the maximum impact occurred, or MEI, is identified in Figure 1. Increased cancer risks were calculated using the modeled annual DPM concentrations and BAAQMD

[10] CalEEMod assumes each truck can carry 10 tons per load or 10 cubic yards of material.

recommended risk assessment methods for infant exposures at residential receptors. Table 3 includes the reported maximum community risk impacts associated with construction activities. Community risk impacts include lifetime cancer risks, annual $PM_{2.5}$ concentrations and the potential non-cancer health effects due to chronic exposure to DPM.

## Operational Community Risk Impacts

Local traffic generated by the project along with evaporative emissions from gasoline storage and fueling could lead to operational community risk impacts. Specific sources of emissions include traffic traveling to and from the project, traffic idling at the project, truck traffic accessing the site (importing fuel) and emissions from transfer and storage of gasoline (i.e., underground tank filling, tank breathing, and vehicle fueling and spillage). Impacts from each of these sources are addressed. These sources are assumed to be operational well into the future (i.e., 30 years). The year 2025 was assumed to be the first full year of operation and was used as the year of analysis for generating emission rates. Emission rates are anticipated to decrease in the future due to improvements in exhaust systems and turnover of the fleet from older, more polluting vehicles, to newer cleaner vehicles.

### Project Traffic-Related Emissions

Daily traffic generation was calculated as 1,506 primary trips per day based on the Project's traffic analysis.[11] The project uses generate 3,003 daily trips (2,993 customer trips and 10 on-site residence trips), but 1,497 are pass-by trips from vehicles already passing by or near the site. For health risk modeling purposes, on-site traffic includes all Project traffic while off-site traffic only included the new primary trips. The distribution of project traffic on local roads (N. Wright Road, Sebastopol Road, and Fulton Road) and project driveways was based on the traffic report for the project. Vehicles were assumed to travel at an average speed of 30 mph while on N. Wright Road and Sebastopol Road, 40 mph while on Fulton Road, and 5 mph while traveling on site at the station.

The number of fuel delivery trucks visiting that station was estimated as 67 trucks per year based on a total station fuel use of 588,000 gallons per year and a tanker truck capacity of 8,800 gallons.[12] These trucks were assumed to arrive/depart the station on N. Wright Road from S.R. 12. Once on site they would travel to the underground fuel tank storage area, unload their fuel, and then depart the station. All fuel delivery trucks were assumed to be heavy heavy-duty diesel fuel trucks (HHDT). Both the customer vehicles and fuel delivery trucks were assumed to travel at a speed of 5 mph while at the station site. Delivery trucks were assumed to travel at 30 mph on N. Wright Road.

[11] W-Trans, *Traffic Impact Study for the Elm Tree Station Project*, July 26, 2013.
[12] CARB. 2022. *Gasoline Service Station Industrywide Risk Assessment Technical Guidance*. February 18, 2022.

**Figure 1. Project Site and Sensitive Receptor Locations**


The primary TACs of concern from project traffic are DPM and non-diesel mobile source air toxics found in total organic gases (TOG). This includes 14 different toxic components of TOG exhaust emissions and five different toxic components of TOG evaporative emissions from gasoline vehicles.[13] DPM, TOG, and $PM_{2.5}$ emissions from customer vehicles were calculated using emission factors from the Caltrans version of the CARB EMFAC2017 emissions model, known as CT-EMFAC2017[14], and the increased project-related traffic described above. Vehicle emission processes modeled include running/idle exhaust, running evaporative losses for TOG, tire and brake wear, and fugitive road dust. Vehicle emissions are projected to decrease in the future and are reflected in the CT-EMFAC2017 emissions estimates. Inputs to the model include region (i.e., Sonoma County), type of road (for road dust calculation purposes), traffic mix assigned by CT-

[13] BAAQMD. 2012. *Recommended Methods for Screening and Modeling Local Risks and Hazard, Version 3.0*. May.
[14] California Department of Transportation. 2019. *CT-EMFAC2017 User Guide*. January.

EMFAC2017 for the county (with BAAQMD recommended truck percentage for non-state highways in Sonoma County of 4.32 percent[15]), year of analysis (i.e., 2025), and season (Annual). Year 2025 emissions were conservatively assumed as being representative of future conditions over the period that cancer risks are evaluated (30 years), since, as discussed above, overall vehicle emissions will decrease in the future.

The CT-EMFAC2017 emission factor model provided emission rates of DPM (assumed to be the same as $PM_{10}$ exhaust), $PM_{2.5}$, and TOG exhaust emissions and evaporative loss emissions. For TOG emissions, the BAAQMD has developed weighted toxicity values for tailpipe and evaporative losses that incorporates the individual toxicity of each compound that make up TOG.[16] The summation of all of the individual weighted toxicity values developed by BAAQMD is then cumulatively weighted and applied in the risk and hazard calculations. TOG emission rates used in the analysis are provided in *Attachment 3*.

All trucks delivering fuel to the station were assumed to be HHDT. The TAC of concern from these trucks is DPM. The EMFAC2021 model was used to calculate DPM and $PM_{2.5}$ exhaust emissions from the fuel delivery trucks at speeds of 5 mph on site and 30 mph on local roads.

*Idling Emissions - Customer Vehicles and Fuel Delivery Trucks*

Idling emissions due to customer vehicles queuing and fuel delivery trucks idling were computed by converting 5 mph emissions rates into hourly emissions for DPM, TOG, and $PM_{2.5}$ for customer vehicles and DPM and $PM_{2.5}$ for the delivery trucks. All customer vehicles using the facility were conservatively assumed to idle, on average, for 3 minutes during each visit to the station, while the fuel delivery trucks were assumed to idle for a total of 10 minutes while at the station. Annual emissions assumed station operating conditions of 24 hours per day and 365 days per year. The analysis of idling emissions is provided in *Attachment 3*.

Fueling Emissions

The transfer and storage of gasoline results in emissions of TOG and TAC compounds. Emissions of TOG and TACs were computed based on projected annual throughput of gasoline (i.e., 438,000 gallons) using emission factors developed by CARB.[17] CARB has identified seven TACs of primary concern in gasoline as benzene, ethyl benzene, n-hexane, propylene, naphthalene, xylenes, and toluene.[18] Cancer risks are associated with three of these TACs (benzene, ethyl benzene, and naphthalene), all seven of these TACs cause non-cancer chronic (long term) health effects, and three of the TACs (benzene, toluene, and xylenes) cause non-cancer acute (short term) health effects. Six of these TACs were included in this evaluation. Propylene was not included since it is only present in winter gasoline;[19] it constitutes a very small fraction of the liquid and vapor fractions of gasoline which results in very low emissions and would result in negligible non-cancer chronic health effects. This methodology is consistent with recent BAAQMD permit evaluations

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[15] BAAQMD. 2012. *Recommended Methods for Screening and Modeling Local Risks and Hazard, Version 3.0*. May.
[16] BAAQMD. 2012. *Recommended Methods for Screening and Modeling Local Risks and Hazard, Version 3.0*. May.
[17] CARB. 2013. *Revised Emissions Factors for Gasoline Marketing Operations at California Gasoline Dispensing Facilities*. December 23, 2013.
[18] CARB. 2022. *Gasoline Service Station Industrywide Risk Assessment Technical Guidance*. February 18, 2022.
[19] CARB. 2022. *Gasoline Service Station Industrywide Risk Assessment Technical Guidance*. February 18, 2022.

for GDFs which evaluate health effects from all the above TACs except propylene. The storage of diesel fuel results in negligible evaporative emissions.

The TOG emission factors are based on gasoline throughput and account for emissions from fuel storage tank loading and pressure driven (breathing) losses, motor vehicle refueling, spillage while refueling, and minor emissions from vapor permeation through gasoline dispensing hoses. The fueling emission factors take into account the effects of vehicles equipped with onboard refueling vapor recovery (ORVR) systems. ORVR systems were phased in beginning with 1998 model year passenger vehicles, and are now installed on all passenger, light-duty, and medium-duty vehicles manufactured since the 2006 model year. Emissions of TACs were computed using the weight fractions of the TACs in gasoline liquid and vapor and applied to the computed TOG emissions, as recommended by CARB.[20] For TACs with non-cancer acute health effects, maximum hourly emission rates were computed using the assumptions and methods recommenced by CARB.[21] A*ttachment 3* includes emissions calculation of TOG and TAC emissions from gasoline fueling, storage, and transfer for this project.

Dispersion Modeling

The US EPA AERMOD dispersion model was used to predict $PM_{2.5}$, DPM and other TAC concentrations at the sensitive receptors (residences) in the vicinity of the project site. The modeling used the same (2013-2017) meteorological data from the Sonoma County Airport as previously discussed for the construction health risk modeling. TAC and $PM_{2.5}$ concentrations from on-site and off-site emission sources were calculated at nearby existing sensitive receptors using a receptor height of 1.5 meters (4.9 feet). Modeling was also conducted at the location of a future on-site residential unit above the Project's Market at a receptor height of 5.8 meters (19 feet). Since the terrain elevation differences between the emission sources and receptors they would affect are relatively small, flat terrain was used for the modeling. Based on the land uses in the vicinity of the project rural conditions were assumed for the modeling. The modeling assumed the fuel station would operate 24 hours per day, 365 days per year.

On-site emission sources include project-related customer vehicles, fuel delivery trucks and operation of the fuel station. Off-site emission sources include project customer vehicles and fuel delivery trucks. The modeled emission sources and receptors where TAC concentrations were calculated are shown in Figure 2. Vehicle emissions were modeled as line-volume sources (a series of volume sources along a line) representing off-site travel routes within about 1,000 feet from the project site and on-site travel routes, as depicted in Figure 2. Vehicle line-volume source modeling parameters were based on EPA methods.[22] Emissions of DPM, TOG, and $PM_{2.5}$ from idling customer vehicles were modeled using an area source with a source height of 1.0 meter. The area source was placed in the vicinity of the fuel dispensing area. Fuel delivery truck idling was modeled with a point source at the storage tank filling area using San Joaquin Valley APCD recommended source parameters[23]. Gasoline storage tank vents were modeled with two point

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[20] CARB. 2022. *Gasoline Service Station Industrywide Risk Assessment Technical Guidance*. February 18, 2022.
[21] CARB. 2022. *Gasoline Service Station Industrywide Risk Assessment Technical Guidance*. February 18, 2022.
[22] US EPA. 2015. *Transportation Conformity Guidance for Quantitative Hot-spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas*. November 2015.
[23] San Joaquin Valley Air Pollution Control District, *Guidance for Air Dispersion Modeling*, Draft 01/07 Rev 2.0

sources in the storage tank area using CARB recommended source parameters[24]. TAC emissions from the fuel station were modeled using volume sources as recommended by CARB.[25] Four volume sources with side lengths of 12.5 meters (41 feet) and a 5.5-meter (18 feet) height were used. Two of the volume sources were used to represent vehicle fueling and hose loss emissions with a release height of 1.5 meter and the other two volume sources represented the emission from fuel spillage with a release height of 1.0 meter. Details on the emission calculations and dispersion modeling information for these sources are provided in *Attachment 3*.

Cancer Risk, $PM_{2.5}$ and Hazards

Using the maximum modeled TACs, TOG and $PM_{2.5}$ concentrations, individual cancer risks were computed using the most recent methods recommended by BAAQMD and OEHHA that include nearly continuous exposures with adjustments for infants and children. Based on modeled concentrations, cancer risks were calculated for 30-year residential exposures, assuming constant emissions at 2025 levels. Table 3 includes the excess cancer risk, annual $PM_{2.5}$ concentration and the maximum acute or chronic hazards associated with the project operation at the locations of residential MEI. Figure 2 shows the location where the maximum impacts occur. Note that the maximum impacts from construction and operation occurred at the same receptor.

This analysis found that the combination of TAC emissions from construction and operation would not exceed the single-source thresholds of significance for community risk impacts in terms of excess lifetime cancer risk, annual $PM_{2.5}$ concentrations and Hazard Index.

**Table 3. Maximum Health Risk Impacts at the Off-site MEI**

| Source | Cancer Risk (per million) | Maximum Annual $PM_{2.5}$ ($\mu g/m^3$) | Maximum Hazard Index |
|---|---|---|---|
| Project Impact to Existing Receptors | | | |
| Project Construction (2 years) | 6.34 (infant) | 0.07 | <0.01 |
| Project Operation (28 years) | 0.87 | 0.02 | 0.34 |
| Total (30 years) | 7.21 | 0.07 | 0.34 |
| ***BAAQMD Single-Source Threshold*** | ***10*** | ***0.3*** | ***1.0*** |
| ***Exceed Threshold?*** | *No* | *No* | *No* |
| Future On-Site Residential Occupants | | | |
| Project Operation (30 years) | 3.35 | 0.02 | 0.25 |
| ***BAAQMD Single-Source Threshold*** | ***10*** | ***0.3*** | ***1.0*** |
| ***Exceed Threshold?*** | *No* | *No* | *No* |

There are potential planned residences to the east of the Project site that may be present during operation of the Project. These receptors were not modeled; however, their impacts would be less than the impacts for the on-site residential receptor. Those impacts were found to be below the thresholds.

[24] CARB. 2022. *Gasoline Service Station Industrywide Risk Assessment Technical Guidance*. February 18, 2022.
[25] CARB. 2022. *Gasoline Service Station Industrywide Risk Assessment Technical Guidance*. February 18, 2022.

**Figure 2. Project Site, Sensitive Receptor Locations, and Modeled Emission Sources**


## 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 are located within 1,000 feet of a project site (i.e., influence area) that can affect the sensitive receptor of greatest impact (i.e., the MEI). These sources could include rail lines, highways, busy surface streets, and stationary sources identified by BAAQMD.

A review of the project area using traffic data collected by the traffic consultant indicated that four roadways within the influence area, S.R. 12, N. Wright Road, Sebastopol Road, and Fulton Road would have traffic exceeding 10,000 vehicles per day. Other nearby streets would have less than 10,000 vehicles per day and are considered negligible sources of TACs. A review of BAAQMD's *Permitted Stationary Sources 2020* geographic information systems (GIS) map tool did not identify stationary sources with the potential to affect the MEI. Health risk impacts from these sources upon the MEI are reported in Table 4. Details of the modeling and health risk calculations are included in *Attachment 4.*

Highways – S.R. 12

The project MEI is located near S.R. 12. Highway 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 S.R. 12risks and hazards upon the Project MEI and 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 S.R. 12 screening level impacts are listed in Table 4 and included in *Attachment 4*. Refined modeling of the highway 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.

Local Roadways – N. Wright Road, Sebastopol Road, and Fulton Road

A refined analysis of potential health impacts from vehicle traffic on N. Wright Road, Sebastopol Road, and Fulton Road was conducted since the roadway was estimated to have average daily traffic (ADT) exceeding 10,000 vehicles. The refined analysis involved predicting emissions for the future plus project 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 are then computed based on the modeled exposures. *Attachment 1* includes a description of how health risk impacts, including cancer risk are computed.

*Emissions Rates*

This analysis involved the development of DPM, organic TACs, and $PM_{2.5}$ emissions for traffic on N. Wright Road, Sebastopol Road, and Fulton Road using CT-EMFAC2017, as described above in the project traffic modeling. Hourly emissions rates were developed for DPM, organic TACs, and $PM_{2.5}$ along the applicable segments of N. Wright Road, Sebastopol Road, and Fulton Road within 1,000 feet of the project site. TAC and $PM_{2.5}$ concentrations at the MEI location were developed using these emissions rates with an air quality dispersion model (AERMOD). Roadway dispersion modeling was conducted similarly as described in the project traffic modeling above. Maximum increased lifetime cancer risks and maximum annual $PM_{2.5}$ concentrations for the MEI receptor were then computed using modeled TAC and $PM_{2.5}$ concentrations and BAAQMD methods and exposure parameters described in *Attachment 1*.

The Future plus Project ADT for N. Wright Road, Sebastopol Road, and Fulton Road was based on AM and PM peak-hour future traffic volumes for the nearby roadway provided by the project's traffic data.[26] The calculated ADT on N. Wright Road was 32,460 vehicles, on Sebastopol Road was 19,960 vehicles, and on Fulton Road was 44,360 vehicles. Note that existing traffic volumes

[26] W-Trans, *Traffic Impact Study for the Elm Tree Station Project*, July 26, 2013.

are about 40 to 60% of future projected volumes.  Average hourly traffic distributions for Sonoma County roadways were developed using the EMFAC model,[27] which were then applied to the ADT volumes to obtain estimated hourly traffic volumes and emissions for the roadway.

*Computed Cancer and Non-Cancer Health Impacts*

The cancer risk, $PM_{2.5}$ concentration, and HI impacts from N. Wright Road, Sebastopol Road, and Fulton Road on the project MEI are shown in Table 4. 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 traffic on N. Wright Road, Sebastopol Road, and Fulton Road are provided in *Attachment 4.*

<u>BAAQMD Permitted Stationary Sources</u>

Permitted stationary sources of air pollution near the project site were identified using BAAQMD's *Permitted Stationary Sources 2020* GIS map website.[28] This mapping tool identifies the location of nearby stationary sources and their estimated risk and hazard impacts. No sources within the project's 1,000-foot influence area were identified using this tool.

<u>Summary of Health Risks at the Project MEI</u>

Table 4 reports both the project and cumulative community risk impacts at the sensitive receptors most affected by project construction and operation (i.e., the project MEI). The project's community risk from project construction and operational activities would not exceed the maximum increased cancer risk, annual $PM_{2.5}$ concentration, and hazard risk single-source threshold. In addition, the combined unmitigated cancer risk and HI values would not exceed their respective cumulative thresholds. The combined annual $PM_{2.5}$ concentration would equal the cumulative thresholds due to the concentration from future non-project traffic along existing roadways.

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[27] 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.

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

**Table 4. Cumulative Health Risk Impacts at the Off- and On-Site MEI**

| Source | Cancer Risk (per million) | Maximum Annual $PM_{2.5}$ ($\mu g/m^3$) | Chronic Hazard Index |
|---|---|---|---|
| Project Impact to Existing Receptors | | | |
| Project Impact | 7.21 | 0.00[a] | 0.34 |
| S.R. 12 (from BAAQMD Raster data) | 3.42 | 0.07 | - |
| N. Wright Rd. (32,460 ADT) | 5.26 | 0.33 | <0.01 |
| Sebastopol Rd. (19,960 ADT) | 4.28 | 0.30 | <0.01 |
| Fulton Road (44,360 ADT) | 1.50 | 0.09 | <0.01 |
| Total | 21.7 | 0.8 | <0.4 |
| ***BAAQMD Cumulative-Source Threshold*** | ***100*** | ***0.8*** | ***10.0*** |
| ***Exceed Threshold?*** | *No* | *No* | *No* |
| Future Residential Occupants | | | |
| Project Impact | 3.35 | 0.00[a] | 0.25 |
| S.R. 12 (from BAAQMD Raster data) | 5.67 | 0.12 | - |
| N. Wright Rd. (32,460 ADT) | 1.89 | 0.11 | <0.01 |
| Sebastopol Rd. (19,960 ADT) | 0.85 | 0.05 | <0.01 |
| Fulton Road (44,360 ADT) | 3.32 | 0.19 | <0.01 |
| Total | 15.08 | 0.5 | <0.28 |
| ***BAAQMD Cumulative-Source Threshold*** | ***100*** | ***0.8*** | ***10.0*** |
| ***Exceed Threshold?*** | *No* | *No* | *No* |

[a] *Project traffic that causes increased $PM_{2.5}$ concentrations included in cumulative traffic volumes modeled on local roadways.*

The $PM_{2.5}$ concentration from future traffic along existing roadways alone almost exceeds the cumulative threshold at 0.79 $\mu g/m^3$. Cumulative risks equal the $PM_{2.5}$ concentration threshold of 0.8 $\mu g/m^3$ because of the influence from local roadways at the MEI. The project's $PM_{2.5}$ concentration represents 2 percent of the total $PM_{2.5}$ cumulative concentration. According to BAAQMD, health risks would be less-than-significant to the MEI if the risks from the project are reduced below the single-source thresholds.[29] Therefore, the project would not substantially contribute to the total cumulative $PM_{2.5}$ concentration. The project would not be cumulatively considerable and mitigation would not be required on the part of the project to mitigate the exceedance of the cumulative source threshold for annual $PM_{2.5}$ concentration.

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

## 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* 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 4* includes the cumulative health risk calculations from existing sources affecting the MEI and on-site residence.

## 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.[30] 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.[31] 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.[32] 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, 95$^{th}$ percentile breathing rates are used for the third trimester and infant exposures, and 80$^{th}$ percentile breathing rates for child and adult exposures. For children at schools and daycare facilities, BAAQMD recommends using the 95$^{th}$ percentile 8-hour breathing rates. Additionally, CARB and the BAAQMD recommend the use of a residential exposure duration of

[30] 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.
[31] CARB, 2015. *Risk Management Guidance for Stationary Sources of Air Toxics*. July 23.
[32] 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) = $CPF \times Inhalation\ Dose \times ASF \times ED/AT \times FAH \times 10^{6}$

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 = $C_{air} \times DBR^{*} \times A \times (EF/365) \times 10^{-6}$

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

The health risk parameters used in this evaluation are summarized in Tables 1 and 2.

**TABLE 1 - Health Risk Parameters used for Cancer Risk Calculations**:

| Parameter | *Exposure Type* → | Infant | | Child | Adult |
|---|---|---|---|---|---|
| | *Age Range* → | 3rd Trimester | 0<2 | 2 < 16 | 16 - 30 |
| Cancer Potency Factor (mg/kg-day)$^{-1}$ (Refer to Table 2) | | | | | |
| Daily Breathing Rate (L/kg-day) 80th Percentile Rate | | 273 | 758 | 572 | 261 |
| 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. | | | | | |

**Table 2 - Cancer Potency Factors and Reference Exposure Levels**

| TAC | Cancer Potency Factor (mg/kg-day)$^{-1}$ | Reference Exposure Levels (µg/m$^3$) Acute (1-hour) | Reference Exposure Levels (µg/m$^3$) Chronic (annual ave) |
|---|---|---|---|
| DPM | 1.10E+00 | - | 5 |
| Benzene | 1.00E-01 | 27 | 3 |
| Ethylbenzene | 8.70E-03 | - | 2,000 |
| n-Hexane | - | - | 7,000 |
| Naphthalene | 1.20E-01 | - | 9 |
| Xylene | - | 22,000 | 700 |
| Toluene | - | 5,000 | 420 |
| TOG Exhaust | 6.28E-03 | 3,283 | 284 |
| TOG Evaporative | 3.70E-04 | 762 | 120 |

Non-Cancer Hazards

Non-cancer health hazards from TAC exposure are 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 projects involving construction or 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:** **874 N. Wright Road DEFAULTS**

**Complete ALL Portions in Yellow**

See Equipment Type TAB for type, horsepower and load factor

| | | | | |
|---|---|---|---|---|
| **Project Size** | **1** | **Dwelling Units** | **1.12** | **total project acres disturbed** |
| | **806** | **s.f. residential** | | |
| | | **s.f. retail** | | |
| | | **s.f. office/commercial** | | |
| | **3,540** | **s.f. other, specify:** | **Gas Station** | |
| | | **s.f. parking garage** | | **spaces** |
| | | **s.f. parking lot** | | **spaces** |
| **Construction Days (i.e, M-F)** | | **to** | | |
| **Construction Hours** | | **am to** | | **pm** |

**Pile Driving? Y/N?**

**Project include on-site GENERATOR OR FIRE PUMP during project OPERATION (not construction)? Y/N? ____**

**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:** | | | | **Overall Import/Export Volumes** |
| | | **End Date:** | | | | | | |
| | Concrete/Industrial Saws | 81 | 0.73 | | | #DIV/0! | 0 | **Demolition Volume** |
| | Excavators | 158 | 0.38 | | | #DIV/0! | 0 | Square footage of buildings to be demolished |
| | Rubber-Tired Dozers | 247 | 0.4 | | | #DIV/0! | 0 | (*or* total tons to be hauled) |
| | Tractors/Loaders/Backhoes | 97 | 0.37 | | | #DIV/0! | 0 | __0__ square feet *or* |
| | *Other Equipment?* | | | | | | | __?__ Hauling volume (tons) |
| | | | | | | | | Any pavement demolished and hauled? __?__ tons |
| | **Site Preparation** | **Start Date:** | 6/1/2023 | **Total phase:** | 2 | | | |
| | | **End Date:** | 6/2/2023 | | | | | |
| 1 | Graders | 187 | 0.41 | 8 | 2 | 8 | 1227 | |
| 1 | Rubber Tired Dozers | 247 | 0.4 | 7 | 2 | 7 | 1383 | |
| 1 | Tractors/Loaders/Backhoes | 97 | 0.37 | 8 | 2 | 8 | 574 | |
| | *Other Equipment?* | | | | | | | |
| | **Grading / Excavation** | **Start Date:** | 6/3/2023 | **Total phase:** | 4 | | | |
| | | **End Date:** | 6/8/2023 | | | | | **Soil Hauling Volume** |
| | Excavators | 158 | 0.38 | | | 0 | 0 | Export volume = __1,000__ cubic yards? |
| 1 | Graders | 187 | 0.41 | 8 | 4 | 8 | 2453 | Import volume = __1,000__ cubic yards? |
| 1 | Rubber Tired Dozers | 247 | 0.4 | 8 | 4 | 8 | 3162 | |
| | Concrete/Industrial Saws | 81 | 0.73 | | | 0 | 0 | |
| 2 | Tractors/Loaders/Backhoes | 97 | 0.37 | 7 | 4 | 7 | 2010 | |
| | *Other Equipment?* | | | | | | | |
| | **Trenching/Foundation** | **Start Date:** | 6/3/2023 | **Total phase:** | 4 | | | |
| | | **End Date:** | 6/8/2023 | | | | | |
| 1 | Tractor/Loader/Backhoe | 97 | 0.37 | 8 | 4 | 8 | 1148 | |
| 1 | Excavators | 158 | 0.38 | 8 | 4 | 8 | 1921 | |
| | *Other Equipment?* | | | | | | | |
| | **Building - Exterior** | **Start Date:** | 6/9/2023 | **Total phase:** | 200 | | | **Cement Trucks? __34__ Total Round-Trips** |
| | | **End Date:** | 3/14/2024 | | | | | |
| 1 | Cranes | 231 | 0.29 | 6 | 200 | 6 | 80388 | Electric? (Y/N) ___ Otherwise assumed diesel |
| 1 | Forklifts | 89 | 0.2 | 6 | 200 | 6 | 21360 | Liquid Propane (LPG)? (Y/N) ___ Otherwise Assumed diesel |
| 1 | Generator Sets | 84 | 0.74 | 8 | 200 | 8 | 99456 | Or temporary line power? (Y/N) ___ |
| 1 | Tractors/Loaders/Backhoes | 97 | 0.37 | 6 | 200 | 6 | 43068 | |
| 3 | Welders | 46 | 0.45 | 8 | 200 | 8 | 99360 | |
| | *Other Equipment?* | | | | | | | |
| **Building - Interior/Architectural Coating** | | **Start Date:** | 3/15/2024 | **Total phase:** | 10 | | | |
| | | **End Date:** | 3/29/2024 | | | | | |
| 1 | Air Compressors | 78 | 0.48 | 6 | 6 | 3.6 | 1348 | |
| | Aerial Lift | 62 | 0.31 | | | 0 | 0 | |
| | *Other Equipment?* | | | | | | | |
| | **Paving** | **Start Date:** | 3/30/2024 | **Total phase:** | 10 | | | |
| | | **Start Date:** | 4/12/2024 | | | | | |
| 1 | Cement and Mortar Mixers | 9 | 0.56 | 6 | 10 | 6 | 302 | |
| 1 | Pavers | 130 | 0.42 | 6 | 10 | 6 | 3276 | **Asphalt? ___ cubic yards or __45_ round trips?** |
| 1 | Paving Equipment | 132 | 0.36 | 8 | 10 | 8 | 3802 | |
| 1 | Rollers | 80 | 0.38 | 7 | 10 | 7 | 2128 | |
| 1 | Tractors/Loaders/Backhoes | 97 | 0.37 | 8 | 10 | 8 | 2871 | |
| | *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**

**Table 6**
**Trip Generation Summary**

| Land Use | Units | Daily | | AM Peak Hour | | | | PM Peak Hour | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Rate | Trips | Rate | Trips | In | Out | Rate | Trips | In | Out |
| Convenience Market w/gas pumps | 3.54 ksf | 845.6 | 2,993 | 40.92 | 145 | 72 | 73 | 50.92 | 180 | 90 | 90 |
| *Pass-by Component* | | *-50%* | *-1,497* | *-50%* | *-73* | *-36* | *-37* | *-50%* | *-90* | *-45* | *-45* |
| Single Family Residence | 1 du | 9.52 | 10 | 0.75 | 1 | 0 | 1 | 1.00 | 1 | 1 | 0 |
| **Total Primary Trips** | | | **1,506** | | **73** | **36** | **37** | | **91** | **46** | **45** |

Notes: ksf = thousand square feet, du = dwelling units

### Trip Distribution

The pattern used to allocate new project trips to the street network was based on the location of likely trip origins and destinations as well as knowledge of local travel trends near the project site. The applied distribution assumptions and resulting trips are shown in Table 7.

**Table 7**
**Trip Distribution Assumptions**

| Route | Percent | Daily Trips | AM Trips | PM Trips |
|---|---|---|---|---|
| SR 12 to/from the west | 30% | 452 | 22 | 27 |
| SR 12 to/from the east | 35% | 527 | 26 | 32 |
| Wright Rd to/from the south | 5% | 75 | 3 | 4 |
| Fulton Rd to/from the north | 15% | 226 | 11 | 14 |
| Sebastopol Rd to/from the east | 15% | 226 | 11 | 14 |
| **TOTAL** | **100%** | **1,506** | **73** | **91** |

# Santa Rosa Gas Station Detailed Report

## Table of Contents

# 1. Basic Project Information

## 1.1. Basic Project Information

| Data Field | Value |
|---|---|
| Project Name | Santa Rosa Gas Station |
| Lead Agency | — |
| Land Use Scale | Project/site |
| Analysis Level for Defaults | County |
| Windspeed (m/s) | 2.20 |
| Precipitation (days) | 24.4 |
| Location | 874 N Wright Rd, Santa Rosa, CA 95407, USA |
| County | Sonoma-San Francisco |
| City | Santa Rosa |
| Air District | Bay Area AQMD |
| Air Basin | San Francisco Bay Area |
| TAZ | 954 |
| EDFZ | 2 |
| Electric Utility | Sonoma Clean Power |
| Gas Utility | Pacific Gas & Electric |

## 1.2. Land Use Types

| Land Use Subtype | Size | Unit | Lot Acreage | Building Area (sq ft) | Landscape Area (sq ft) | Special Landscape Area (sq ft) | Population | Description |
|---|---|---|---|---|---|---|---|---|
| Convenience Market with Gas Pumps | 3.00 | 1000sqft | 1.12 | 3,540 | 0.00 | 0.00 | — | — |
| Single Family Housing | 1.00 | Dwelling Unit | 0.00 | 806 | 0.00 | 0.00 | 3.00 | — |

### 1.3. User-Selected Emission Reduction Measures by Emissions Sector

| Sector | # | Measure Title |
|---|---|---|
| Construction | C-5 | Use Advanced Engine Tiers |
| Construction | C-10-A | Water Exposed Surfaces |
| Construction | C-11 | Limit Vehicle Speeds on Unpaved Roads |

# 2. Emissions Summary

## 2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Un/Mit. | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 2.18 | 27.2 | 1.01 | 8.36 | 9.37 | 0.93 | 3.77 | 4.71 | 14.7 | 8,444 |
| Mit. | 0.56 | 17.2 | 0.26 | 4.03 | 4.14 | 0.24 | 1.68 | 1.80 | 14.7 | 8,444 |
| % Reduced | 74% | 37% | 75% | 52% | 56% | 74% | 55% | 62% | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 4.97 | 18.0 | 0.47 | 1.73 | 2.05 | 0.44 | 0.48 | 0.79 | 0.38 | 8,423 |
| Mit. | 4.85 | 17.1 | 0.26 | 1.73 | 1.87 | 0.24 | 0.48 | 0.61 | 0.38 | 8,423 |
| % Reduced | 2% | 5% | 45% | — | 9% | 44% | — | 22% | — | — |
| Average Daily (Max) | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 0.55 | 7.59 | 0.20 | 0.62 | 0.83 | 0.19 | 0.20 | 0.39 | 1.94 | 3,107 |
| Mit. | 0.21 | 7.09 | 0.10 | 0.55 | 0.66 | 0.10 | 0.16 | 0.26 | 1.94 | 3,107 |
| % Reduced | 63% | 7% | 49% | 11% | 20% | 48% | 17% | 32% | — | — |
| Annual (Max) | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Unmit. | 0.10 | 1.38 | 0.04 | 0.11 | 0.15 | 0.03 | 0.04 | 0.07 | 0.32 | 514 |
| Mit. | 0.04 | 1.29 | 0.02 | 0.10 | 0.12 | 0.02 | 0.03 | 0.05 | 0.32 | 514 |
| % Reduced | 63% | 7% | 49% | 11% | 20% | 48% | 17% | 32% | — | — |

## 2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Year | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily - Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| 2023 | 2.18 | 27.2 | 1.01 | 8.36 | 9.37 | 0.93 | 3.77 | 4.71 | 10.8 | 8,345 |
| 2024 | 0.71 | 14.8 | 0.31 | 1.73 | 2.04 | 0.29 | 0.48 | 0.77 | 14.7 | 8,444 |
| Daily - Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| 2023 | 1.29 | 18.0 | 0.47 | 1.25 | 1.72 | 0.44 | 0.35 | 0.79 | 0.28 | 7,447 |
| 2024 | 4.97 | 17.3 | 0.43 | 1.73 | 2.05 | 0.40 | 0.48 | 0.77 | 0.38 | 8,423 |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| 2023 | 0.55 | 7.59 | 0.20 | 0.62 | 0.83 | 0.19 | 0.20 | 0.39 | 1.94 | 3,107 |
| 2024 | 0.33 | 2.93 | 0.07 | 0.23 | 0.30 | 0.07 | 0.06 | 0.13 | 0.85 | 1,303 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| 2023 | 0.10 | 1.38 | 0.04 | 0.11 | 0.15 | 0.03 | 0.04 | 0.07 | 0.32 | 514 |
| 2024 | 0.06 | 0.53 | 0.01 | 0.04 | 0.05 | 0.01 | 0.01 | 0.02 | 0.14 | 216 |

## 2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Year | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily - Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| 2023 | 0.56 | 17.2 | 0.26 | 4.03 | 4.14 | 0.24 | 1.68 | 1.80 | 10.8 | 8,345 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 2024 | 0.37 | 14.5 | 0.13 | 1.73 | 1.87 | 0.13 | 0.48 | 0.61 | 14.7 | 8,444 |
| Daily - Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| 2023 | 0.43 | 17.1 | 0.26 | 1.25 | 1.51 | 0.24 | 0.35 | 0.59 | 0.28 | 7,447 |
| 2024 | 4.85 | 16.8 | 0.26 | 1.73 | 1.87 | 0.24 | 0.48 | 0.61 | 0.38 | 8,423 |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| 2023 | 0.18 | 7.09 | 0.10 | 0.55 | 0.66 | 0.10 | 0.16 | 0.26 | 1.94 | 3,107 |
| 2024 | 0.21 | 2.86 | 0.04 | 0.23 | 0.27 | 0.04 | 0.06 | 0.10 | 0.85 | 1,303 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| 2023 | 0.03 | 1.29 | 0.02 | 0.10 | 0.12 | 0.02 | 0.03 | 0.05 | 0.32 | 514 |
| 2024 | 0.04 | 0.52 | 0.01 | 0.04 | 0.05 | 0.01 | 0.01 | 0.02 | 0.14 | 216 |

## 2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Un/Mit. | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 11.8 | 9.18 | 0.14 | 4.66 | 4.80 | 0.13 | 0.84 | 0.98 | 796 | 15,628 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 11.1 | 10.6 | 0.14 | 4.66 | 4.80 | 0.13 | 0.84 | 0.98 | 736 | 14,895 |
| Average Daily (Max) | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 9.74 | 5.81 | 0.07 | 2.07 | 2.14 | 0.07 | 0.37 | 0.44 | 746 | 7,396 |
| Annual (Max) | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 1.78 | 1.06 | 0.01 | 0.38 | 0.39 | 0.01 | 0.07 | 0.08 | 123 | 1,224 |

## 2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Sector | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Mobile | 11.6 | 9.15 | 0.14 | 4.66 | 4.80 | 0.13 | 0.84 | 0.98 | 62.4 | 14,818 |
| Area | 0.14 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 0.79 |
| Energy | < 0.005 | 0.03 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 55.7 |
| Water | — | — | — | — | — | — | — | — | — | 1.07 |
| Waste | — | — | — | — | — | — | — | — | — | 18.2 |
| Refrig. | — | — | — | — | — | — | — | — | 734 | 734 |
| Total | 11.8 | 9.18 | 0.14 | 4.66 | 4.80 | 0.13 | 0.84 | 0.98 | 796 | 15,628 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Mobile | 11.0 | 10.6 | 0.14 | 4.66 | 4.80 | 0.13 | 0.84 | 0.98 | 1.62 | 14,086 |
| Area | 0.11 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 |
| Energy | < 0.005 | 0.03 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 55.7 |
| Water | — | — | — | — | — | — | — | — | — | 1.07 |
| Waste | — | — | — | — | — | — | — | — | — | 18.2 |
| Refrig. | — | — | — | — | — | — | — | — | 734 | 734 |
| Total | 11.1 | 10.6 | 0.14 | 4.66 | 4.80 | 0.13 | 0.84 | 0.98 | 736 | 14,895 |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| Mobile | 9.61 | 5.78 | 0.07 | 2.07 | 2.13 | 0.07 | 0.37 | 0.44 | 12.0 | 6,586 |
| Area | 0.12 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 0.39 |
| Energy | < 0.005 | 0.03 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 55.7 |
| Water | — | — | — | — | — | — | — | — | — | 1.07 |
| Waste | — | — | — | — | — | — | — | — | — | 18.2 |
| Refrig. | — | — | — | — | — | — | — | — | 734 | 734 |
| Total | 9.74 | 5.81 | 0.07 | 2.07 | 2.14 | 0.07 | 0.37 | 0.44 | 746 | 7,396 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Annual | — | — | — | — | — | — | — | — | — | — |
| Mobile | 1.75 | 1.06 | 0.01 | 0.38 | 0.39 | 0.01 | 0.07 | 0.08 | 1.98 | 1,090 |
| Area | 0.02 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 0.06 |
| Energy | < 0.005 | 0.01 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 9.22 |
| Water | — | — | — | — | — | — | — | — | — | 0.18 |
| Waste | — | — | — | — | — | — | — | — | — | 3.01 |
| Refrig. | — | — | — | — | — | — | — | — | 122 | 122 |
| Total | 1.78 | 1.06 | 0.01 | 0.38 | 0.39 | 0.01 | 0.07 | 0.08 | 123 | 1,224 |

## 2.6. Operations Emissions by Sector, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Sector | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Mobile | 11.6 | 9.15 | 0.14 | 4.66 | 4.80 | 0.13 | 0.84 | 0.98 | 62.4 | 14,818 |
| Area | 0.14 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 0.79 |
| Energy | < 0.005 | 0.03 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 55.7 |
| Water | — | — | — | — | — | — | — | — | — | 1.07 |
| Waste | — | — | — | — | — | — | — | — | — | 18.2 |
| Refrig. | — | — | — | — | — | — | — | — | 734 | 734 |
| Total | 11.8 | 9.18 | 0.14 | 4.66 | 4.80 | 0.13 | 0.84 | 0.98 | 796 | 15,628 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Mobile | 11.0 | 10.6 | 0.14 | 4.66 | 4.80 | 0.13 | 0.84 | 0.98 | 1.62 | 14,086 |
| Area | 0.11 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 |
| Energy | < 0.005 | 0.03 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 55.7 |
| Water | — | — | — | — | — | — | — | — | — | 1.07 |
| Waste | — | — | — | — | — | — | — | — | — | 18.2 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Refrig. | — | — | — | — | — | — | — | — | 734 | 734 |
| Total | 11.1 | 10.6 | 0.14 | 4.66 | 4.80 | 0.13 | 0.84 | 0.98 | 736 | 14,895 |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| Mobile | 9.61 | 5.78 | 0.07 | 2.07 | 2.13 | 0.07 | 0.37 | 0.44 | 12.0 | 6,586 |
| Area | 0.12 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 0.39 |
| Energy | < 0.005 | 0.03 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 55.7 |
| Water | — | — | — | — | — | — | — | — | — | 1.07 |
| Waste | — | — | — | — | — | — | — | — | — | 18.2 |
| Refrig. | — | — | — | — | — | — | — | — | 734 | 734 |
| Total | 9.74 | 5.81 | 0.07 | 2.07 | 2.14 | 0.07 | 0.37 | 0.44 | 746 | 7,396 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Mobile | 1.75 | 1.06 | 0.01 | 0.38 | 0.39 | 0.01 | 0.07 | 0.08 | 1.98 | 1,090 |
| Area | 0.02 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 0.06 |
| Energy | < 0.005 | 0.01 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 9.22 |
| Water | — | — | — | — | — | — | — | — | — | 0.18 |
| Waste | — | — | — | — | — | — | — | — | — | 3.01 |
| Refrig. | — | — | — | — | — | — | — | — | 122 | 122 |
| Total | 1.78 | 1.06 | 0.01 | 0.38 | 0.39 | 0.01 | 0.07 | 0.08 | 123 | 1,224 |

# 3. Construction Emissions Details

## 3.1. Site Preparation (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road Equipment | 1.54 | 15.1 | 0.72 | — | 0.72 | 0.66 | — | 0.66 | — | 2,070 |
| Dust From Material Movement | — | — | — | 6.26 | 6.26 | — | 3.00 | 3.00 | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.01 | 0.08 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 11.3 |
| Dust From Material Movement | — | — | — | 0.03 | 0.03 | — | 0.02 | 0.02 | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | < 0.005 | 0.02 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 1.88 |
| Dust From Material Movement | — | — | — | 0.01 | 0.01 | — | < 0.005 | < 0.005 | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.04 | 0.03 | 0.00 | 0.06 | 0.06 | 0.00 | 0.01 | 0.01 | 0.32 | 69.0 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | < 0.005 | 0.35 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | < 0.005 | 0.06 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 3.2. Site Preparation (2023) - Mitigated

### Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.27 | 6.40 | 0.04 | — | 0.04 | 0.04 | — | 0.04 | — | 2,070 |
| Dust From Material Movement | — | — | — | 2.44 | 2.44 | — | 1.17 | 1.17 | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | < 0.005 | 0.04 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 11.3 |
| Dust From Material Movement | — | — | — | 0.01 | 0.01 | — | 0.01 | 0.01 | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road Equipment | < 0.005 | 0.01 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 1.88 |
| Dust From Material Movement | — | — | — | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.04 | 0.03 | 0.00 | 0.06 | 0.06 | 0.00 | 0.01 | 0.01 | 0.32 | 69.0 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | < 0.005 | 0.35 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | < 0.005 | 0.06 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 3.3. Grading (2023) - Unmitigated

### Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road Equipment | 1.78 | 17.5 | 0.83 | — | 0.83 | 0.77 | — | 0.77 | — | 2,462 |
| Dust From Material Movement | — | — | — | 7.10 | 7.10 | — | 3.43 | 3.43 | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.02 | 0.19 | 0.01 | — | 0.01 | 0.01 | — | 0.01 | — | 27.0 |
| Dust From Material Movement | — | — | — | 0.08 | 0.08 | — | 0.04 | 0.04 | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | < 0.005 | 0.04 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 4.47 |
| Dust From Material Movement | — | — | — | 0.01 | 0.01 | — | 0.01 | 0.01 | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.05 | 0.04 | 0.00 | 0.08 | 0.08 | 0.00 | 0.02 | 0.02 | 0.42 | 92.0 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.09 | 7.12 | 0.06 | 1.13 | 1.19 | 0.06 | 0.32 | 0.37 | 9.85 | 5,162 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | < 0.005 | 0.95 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | < 0.005 | 0.08 | < 0.005 | 0.01 | 0.01 | < 0.005 | < 0.005 | < 0.005 | 0.05 | 56.5 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | < 0.005 | 0.16 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | < 0.005 | 0.01 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.01 | 9.36 |

## 3.4. Grading (2023) - Mitigated

### Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.32 | 7.70 | 0.05 | — | 0.05 | 0.05 | — | 0.05 | — | 2,462 |
| Dust From Material Movement | — | — | — | 2.77 | 2.77 | — | 1.34 | 1.34 | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | < 0.005 | 0.08 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 27.0 |
| Dust From Material Movement | — | — | — | 0.03 | 0.03 | — | 0.01 | 0.01 | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road Equipment | < 0.005 | 0.02 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 4.47 |
| Dust From Material Movement | — | — | — | 0.01 | 0.01 | — | < 0.005 | < 0.005 | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.05 | 0.04 | 0.00 | 0.08 | 0.08 | 0.00 | 0.02 | 0.02 | 0.42 | 92.0 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.09 | 7.12 | 0.06 | 1.13 | 1.19 | 0.06 | 0.32 | 0.37 | 9.85 | 5,162 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | < 0.005 | 0.95 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | < 0.005 | 0.08 | < 0.005 | 0.01 | 0.01 | < 0.005 | < 0.005 | < 0.005 | 0.05 | 56.5 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | < 0.005 | 0.16 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | < 0.005 | 0.01 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.01 | 9.36 |

## 3.5. Building Construction (2023) - Unmitigated

### Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road Equipment | 1.19 | 9.81 | 0.41 | — | 0.41 | 0.38 | — | 0.38 | — | 1,807 |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 1.19 | 9.81 | 0.41 | — | 0.41 | 0.38 | — | 0.38 | — | 1,807 |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.48 | 3.95 | 0.17 | — | 0.17 | 0.15 | — | 0.15 | — | 729 |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.09 | 0.72 | 0.03 | — | 0.03 | 0.03 | — | 0.03 | — | 121 |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 0.00 | < 0.005 | < 0.005 | 0.06 | 13.7 |
| Vendor | < 0.005 | 0.03 | < 0.005 | < 0.005 | 0.01 | < 0.005 | < 0.005 | < 0.005 | 0.05 | 20.5 |
| Hauling | 0.10 | 7.75 | 0.06 | 1.23 | 1.29 | 0.06 | 0.35 | 0.41 | 10.7 | 5,616 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 0.00 | < 0.005 | < 0.005 | < 0.005 | 12.8 |
| Vendor | < 0.005 | 0.03 | < 0.005 | < 0.005 | 0.01 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 20.5 |
| Hauling | 0.09 | 8.13 | 0.06 | 1.23 | 1.29 | 0.06 | 0.35 | 0.41 | 0.28 | 5,606 |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.01 | 5.19 |
| Vendor | < 0.005 | 0.01 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.01 | 8.26 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 0.04 | 3.24 | 0.02 | 0.49 | 0.51 | 0.02 | 0.14 | 0.16 | 1.87 | 2,262 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | < 0.005 | 0.86 |
| Vendor | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 1.37 |
| Hauling | 0.01 | 0.59 | < 0.005 | 0.09 | 0.09 | < 0.005 | 0.03 | 0.03 | 0.31 | 374 |

## 3.6. Building Construction (2023) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.33 | 8.95 | 0.20 | — | 0.20 | 0.18 | — | 0.18 | — | 1,807 |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.33 | 8.95 | 0.20 | — | 0.20 | 0.18 | — | 0.18 | — | 1,807 |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.13 | 3.61 | 0.08 | — | 0.08 | 0.07 | — | 0.07 | — | 729 |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.02 | 0.66 | 0.01 | — | 0.01 | 0.01 | — | 0.01 | — | 121 |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 0.00 | < 0.005 | < 0.005 | 0.06 | 13.7 |
| Vendor | < 0.005 | 0.03 | < 0.005 | < 0.005 | 0.01 | < 0.005 | < 0.005 | < 0.005 | 0.05 | 20.5 |
| Hauling | 0.10 | 7.75 | 0.06 | 1.23 | 1.29 | 0.06 | 0.35 | 0.41 | 10.7 | 5,616 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 0.00 | < 0.005 | < 0.005 | < 0.005 | 12.8 |
| Vendor | < 0.005 | 0.03 | < 0.005 | < 0.005 | 0.01 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 20.5 |
| Hauling | 0.09 | 8.13 | 0.06 | 1.23 | 1.29 | 0.06 | 0.35 | 0.41 | 0.28 | 5,606 |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.01 | 5.19 |
| Vendor | < 0.005 | 0.01 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.01 | 8.26 |
| Hauling | 0.04 | 3.24 | 0.02 | 0.49 | 0.51 | 0.02 | 0.14 | 0.16 | 1.87 | 2,262 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | < 0.005 | 0.86 |
| Vendor | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 1.37 |
| Hauling | 0.01 | 0.59 | < 0.005 | 0.09 | 0.09 | < 0.005 | 0.03 | 0.03 | 0.31 | 374 |

## 3.7. Building Construction (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 1.13 | 9.44 | 0.37 | — | 0.37 | 0.34 | — | 0.34 | — | 1,807 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.16 | 1.37 | 0.05 | — | 0.05 | 0.05 | — | 0.05 | — | 262 |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.03 | 0.25 | 0.01 | — | 0.01 | 0.01 | — | 0.01 | — | 43.3 |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 0.00 | < 0.005 | < 0.005 | < 0.005 | 12.5 |
| Vendor | < 0.005 | 0.03 | < 0.005 | < 0.005 | 0.01 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 20.2 |
| Hauling | 0.09 | 7.82 | 0.06 | 1.23 | 1.29 | 0.06 | 0.35 | 0.41 | 0.28 | 5,533 |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | < 0.005 | 1.83 |
| Vendor | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 2.93 |
| Hauling | 0.01 | 1.12 | 0.01 | 0.18 | 0.18 | 0.01 | 0.05 | 0.06 | 0.67 | 802 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | < 0.005 | 0.30 |
| Vendor | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.49 |
| Hauling | < 0.005 | 0.20 | < 0.005 | 0.03 | 0.03 | < 0.005 | 0.01 | 0.01 | 0.11 | 133 |

## 3.8. Building Construction (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.33 | 8.95 | 0.20 | — | 0.20 | 0.18 | — | 0.18 | — | 1,807 |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.05 | 1.30 | 0.03 | — | 0.03 | 0.03 | — | 0.03 | — | 262 |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.01 | 0.24 | 0.01 | — | 0.01 | < 0.005 | — | < 0.005 | — | 43.3 |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 0.00 | < 0.005 | < 0.005 | < 0.005 | 12.5 |
| Vendor | < 0.005 | 0.03 | < 0.005 | < 0.005 | 0.01 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 20.2 |
| Hauling | 0.09 | 7.82 | 0.06 | 1.23 | 1.29 | 0.06 | 0.35 | 0.41 | 0.28 | 5,533 |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | < 0.005 | 1.83 |
| Vendor | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 2.93 |
| Hauling | 0.01 | 1.12 | 0.01 | 0.18 | 0.18 | 0.01 | 0.05 | 0.06 | 0.67 | 802 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | < 0.005 | 0.30 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.49 |
| Hauling | < 0.005 | 0.20 | < 0.005 | 0.03 | 0.03 | < 0.005 | 0.01 | 0.01 | 0.11 | 133 |

## 3.9. Paving (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.53 | 4.90 | 0.23 | — | 0.23 | 0.21 | — | 0.21 | — | 995 |
| Paving | 0.00 | — | — | — | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.53 | 4.90 | 0.23 | — | 0.23 | 0.21 | — | 0.21 | — | 995 |
| Paving | 0.00 | — | — | — | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.01 | 0.13 | 0.01 | — | 0.01 | 0.01 | — | 0.01 | — | 27.3 |
| Paving | 0.00 | — | — | — | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | < 0.005 | 0.02 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 4.51 |
| Paving | 0.00 | — | — | — | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Offsite | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.06 | 0.04 | 0.00 | 0.10 | 0.10 | 0.00 | 0.02 | 0.02 | 0.49 | 113 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.13 | 9.84 | 0.08 | 1.63 | 1.71 | 0.08 | 0.46 | 0.54 | 14.2 | 7,336 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.05 | 0.05 | 0.00 | 0.10 | 0.10 | 0.00 | 0.02 | 0.02 | 0.01 | 105 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.12 | 10.4 | 0.08 | 1.63 | 1.71 | 0.08 | 0.46 | 0.54 | 0.37 | 7,323 |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.01 | 2.90 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | < 0.005 | 0.28 | < 0.005 | 0.04 | 0.05 | < 0.005 | 0.01 | 0.01 | 0.17 | 201 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | < 0.005 | 0.48 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | < 0.005 | 0.05 | < 0.005 | 0.01 | 0.01 | < 0.005 | < 0.005 | < 0.005 | 0.03 | 33.2 |

## 3.10. Paving (2024) - Mitigated

### Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.19 | 4.63 | 0.06 | — | 0.06 | 0.05 | — | 0.05 | — | 995 |
| Paving | 0.00 | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.19 | 4.63 | 0.06 | — | 0.06 | 0.05 | — | 0.05 | — | 995 |
| Paving | 0.00 | — | — | — | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.01 | 0.13 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 27.3 |
| Paving | 0.00 | — | — | — | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | < 0.005 | 0.02 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 4.51 |
| Paving | 0.00 | — | — | — | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.06 | 0.04 | 0.00 | 0.10 | 0.10 | 0.00 | 0.02 | 0.02 | 0.49 | 113 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.13 | 9.84 | 0.08 | 1.63 | 1.71 | 0.08 | 0.46 | 0.54 | 14.2 | 7,336 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.05 | 0.05 | 0.00 | 0.10 | 0.10 | 0.00 | 0.02 | 0.02 | 0.01 | 105 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.12 | 10.4 | 0.08 | 1.63 | 1.71 | 0.08 | 0.46 | 0.54 | 0.37 | 7,323 |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.01 | 2.90 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | < 0.005 | 0.28 | < 0.005 | 0.04 | 0.05 | < 0.005 | 0.01 | 0.01 | 0.17 | 201 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | < 0.005 | 0.48 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | < 0.005 | 0.05 | < 0.005 | 0.01 | 0.01 | < 0.005 | < 0.005 | < 0.005 | 0.03 | 33.2 |

## 3.11. Architectural Coating (2024) - Unmitigated

### Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.14 | 0.91 | 0.03 | — | 0.03 | 0.03 | — | 0.03 | — | 134 |
| Architectural Coatings | 4.83 | — | — | — | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | < 0.005 | 0.02 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 3.67 |
| Architectural Coatings | 0.13 | — | — | — | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | < 0.005 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 0.61 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Architectural Coatings | 0.02 | — | — | — | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | < 0.005 | 2.51 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | < 0.005 | 0.07 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | < 0.005 | 0.01 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 3.12. Architectural Coating (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road Equipment | 0.02 | 1.07 | 0.03 | — | 0.03 | 0.03 | — | 0.03 | — | 134 |
| Architectural Coatings | 4.83 | — | — | — | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | < 0.005 | 0.03 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 3.67 |
| Architectural Coatings | 0.13 | — | — | — | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | < 0.005 | 0.01 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 0.61 |
| Architectural Coatings | 0.02 | — | — | — | — | — | — | — | — | — |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | < 0.005 | 2.51 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | < 0.005 | 0.07 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Worker | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | < 0.005 | 0.01 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 3.13. Trenching (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.25 | 2.54 | 0.12 | — | 0.12 | 0.11 | — | 0.11 | — | 583 |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | < 0.005 | 0.03 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 6.39 |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | < 0.005 | 0.01 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 1.06 |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.02 | 0.02 | 0.00 | 0.04 | 0.04 | 0.00 | 0.01 | 0.01 | 0.21 | 46.0 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | < 0.005 | 0.47 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | < 0.005 | 0.08 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 3.14. Trenching (2023) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Location | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.09 | 2.36 | 0.01 | — | 0.01 | 0.01 | — | 0.01 | — | 583 |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | < 0.005 | 0.03 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 6.39 |
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | < 0.005 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 1.06 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Onsite truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.02 | 0.02 | 0.00 | 0.04 | 0.04 | 0.00 | 0.01 | 0.01 | 0.21 | 46.0 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | < 0.005 | 0.47 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | < 0.005 | 0.08 |
| Vendor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hauling | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

# 4. Operations Emissions Details

## 4.1. Mobile Emissions by Land Use

### 4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Convenience Market with Gas Pumps | 11.6 | 9.12 | 0.14 | 4.64 | 4.78 | 0.13 | 0.84 | 0.97 | 62.2 | 14,766 |
| Single Family Housing | 0.05 | 0.03 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | < 0.005 | 0.22 | 52.1 |
| Total | 11.6 | 9.15 | 0.14 | 4.66 | 4.80 | 0.13 | 0.84 | 0.98 | 62.4 | 14,818 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | 11.0 | 10.5 | 0.14 | 4.64 | 4.78 | 0.13 | 0.84 | 0.97 | 1.61 | 14,037 |
| Single Family Housing | 0.04 | 0.04 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | < 0.005 | 0.01 | 49.5 |
| Total | 11.0 | 10.6 | 0.14 | 4.66 | 4.80 | 0.13 | 0.84 | 0.98 | 1.62 | 14,086 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | 1.75 | 1.05 | 0.01 | 0.37 | 0.39 | 0.01 | 0.07 | 0.08 | 1.96 | 1,082 |
| Single Family Housing | 0.01 | 0.01 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.02 | 8.07 |
| Total | 1.75 | 1.06 | 0.01 | 0.38 | 0.39 | 0.01 | 0.07 | 0.08 | 1.98 | 1,090 |

## 4.1.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | 11.6 | 9.12 | 0.14 | 4.64 | 4.78 | 0.13 | 0.84 | 0.97 | 62.2 | 14,766 |
| Single Family Housing | 0.05 | 0.03 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | < 0.005 | 0.22 | 52.1 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Total | 11.6 | 9.15 | 0.14 | 4.66 | 4.80 | 0.13 | 0.84 | 0.98 | 62.4 | 14,818 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | 11.0 | 10.5 | 0.14 | 4.64 | 4.78 | 0.13 | 0.84 | 0.97 | 1.61 | 14,037 |
| Single Family Housing | 0.04 | 0.04 | < 0.005 | 0.02 | 0.02 | < 0.005 | < 0.005 | < 0.005 | 0.01 | 49.5 |
| Total | 11.0 | 10.6 | 0.14 | 4.66 | 4.80 | 0.13 | 0.84 | 0.98 | 1.62 | 14,086 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | 1.75 | 1.05 | 0.01 | 0.37 | 0.39 | 0.01 | 0.07 | 0.08 | 1.96 | 1,082 |
| Single Family Housing | 0.01 | 0.01 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.02 | 8.07 |
| Total | 1.75 | 1.06 | 0.01 | 0.38 | 0.39 | 0.01 | 0.07 | 0.08 | 1.98 | 1,090 |

## 4.2. Energy

### 4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | — | — | — | — | — | — | — | — | — | 20.7 |
| Single Family Housing | — | — | — | — | — | — | — | — | — | 2.06 |
| Total | — | — | — | — | — | — | — | — | — | 22.7 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Convenience Market with Gas Pumps | — | — | — | — | — | — | — | — | — | 20.7 |
| Single Family Housing | — | — | — | — | — | — | — | — | — | 2.06 |
| Total | — | — | — | — | — | — | — | — | — | 22.7 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | — | — | — | — | — | — | — | — | — | 3.42 |
| Single Family Housing | — | — | — | — | — | — | — | — | — | 0.34 |
| Total | — | — | — | — | — | — | — | — | — | 3.76 |

## 4.2.2. Electricity Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | — | — | — | — | — | — | — | — | — | 20.7 |
| Single Family Housing | — | — | — | — | — | — | — | — | — | 2.06 |
| Total | — | — | — | — | — | — | — | — | — | 22.7 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | — | — | — | — | — | — | — | — | — | 20.7 |
| Single Family Housing | — | — | — | — | — | — | — | — | — | 2.06 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Total | — | — | — | — | — | — | — | — | — | 22.7 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | — | — | — | — | — | — | — | — | — | 3.42 |
| Single Family Housing | — | — | — | — | — | — | — | — | — | 0.34 |
| Total | — | — | — | — | — | — | — | — | — | 3.76 |

## 4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | < 0.005 | 0.03 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 33.0 |
| Single Family Housing | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 |
| Total | < 0.005 | 0.03 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 33.0 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | < 0.005 | 0.03 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 33.0 |
| Single Family Housing | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 |
| Total | < 0.005 | 0.03 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 33.0 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | < 0.005 | 0.01 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 5.46 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Single Family Housing | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 |
| Total | < 0.005 | 0.01 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 5.46 |

## 4.2.4. Natural Gas Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | < 0.005 | 0.03 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 33.0 |
| Single Family Housing | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 |
| Total | < 0.005 | 0.03 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 33.0 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | < 0.005 | 0.03 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 33.0 |
| Single Family Housing | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 |
| Total | < 0.005 | 0.03 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 33.0 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | < 0.005 | 0.01 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 5.46 |
| Single Family Housing | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 |
| Total | < 0.005 | 0.01 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 5.46 |

## 4.3. Area Emissions by Source

### 4.3.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Source | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Hearths | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 |
| Consumer Products | 0.09 | — | — | — | — | — | — | — | — | — |
| Architectural Coatings | 0.01 | — | — | — | — | — | — | — | — | — |
| Landscape Equipment | 0.03 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 0.79 |
| Total | 0.14 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 0.79 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Hearths | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 |
| Consumer Products | 0.09 | — | — | — | — | — | — | — | — | — |
| Architectural Coatings | 0.01 | — | — | — | — | — | — | — | — | — |
| Total | 0.11 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Hearths | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 |
| Consumer Products | 0.02 | — | — | — | — | — | — | — | — | — |
| Architectural Coatings | < 0.005 | — | — | — | — | — | — | — | — | — |
| Landscape Equipment | < 0.005 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 0.06 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Total | 0.02 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 0.06 |

### 4.3.1. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Source | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Hearths | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 |
| Consumer Products | 0.09 | — | — | — | — | — | — | — | — | — |
| Architectural Coatings | 0.01 | — | — | — | — | — | — | — | — | — |
| Landscape Equipment | 0.03 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 0.79 |
| Total | 0.14 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 0.79 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Hearths | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 |
| Consumer Products | 0.09 | — | — | — | — | — | — | — | — | — |
| Architectural Coatings | 0.01 | — | — | — | — | — | — | — | — | — |
| Total | 0.11 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Hearths | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 |
| Consumer Products | 0.02 | — | — | — | — | — | — | — | — | — |
| Architectural Coatings | < 0.005 | — | — | — | — | — | — | — | — | — |
| Landscape Equipment | < 0.005 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 0.06 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Total | 0.02 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 0.06 |

# 4.4. Water Emissions by Land Use

## 4.4.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | — | — | — | — | — | — | — | — | — | 0.94 |
| Single Family Housing | — | — | — | — | — | — | — | — | — | 0.14 |
| Total | — | — | — | — | — | — | — | — | — | 1.07 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | — | — | — | — | — | — | — | — | — | 0.94 |
| Single Family Housing | — | — | — | — | — | — | — | — | — | 0.14 |
| Total | — | — | — | — | — | — | — | — | — | 1.07 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | — | — | — | — | — | — | — | — | — | 0.16 |
| Single Family Housing | — | — | — | — | — | — | — | — | — | 0.02 |
| Total | — | — | — | — | — | — | — | — | — | 0.18 |

### 4.4.1. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | — | — | — | — | — | — | — | — | — | 0.94 |
| Single Family Housing | — | — | — | — | — | — | — | — | — | 0.14 |
| Total | — | — | — | — | — | — | — | — | — | 1.07 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | — | — | — | — | — | — | — | — | — | 0.94 |
| Single Family Housing | — | — | — | — | — | — | — | — | — | 0.14 |
| Total | — | — | — | — | — | — | — | — | — | 1.07 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | — | — | — | — | — | — | — | — | — | 0.16 |
| Single Family Housing | — | — | — | — | — | — | — | — | — | 0.02 |
| Total | — | — | — | — | — | — | — | — | — | 0.18 |

## 4.5. Waste Emissions by Land Use

### 4.5.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | — | — | — | — | — | — | — | — | — | 17.0 |
| Single Family Housing | — | — | — | — | — | — | — | — | — | 1.19 |
| Total | — | — | — | — | — | — | — | — | — | 18.2 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | — | — | — | — | — | — | — | — | — | 17.0 |
| Single Family Housing | — | — | — | — | — | — | — | — | — | 1.19 |
| Total | — | — | — | — | — | — | — | — | — | 18.2 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | — | — | — | — | — | — | — | — | — | 2.81 |
| Single Family Housing | — | — | — | — | — | — | — | — | — | 0.20 |
| Total | — | — | — | — | — | — | — | — | — | 3.01 |

## 4.5.1. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Convenience Market with Gas Pumps | — | — | — | — | — | — | — | — | — | 17.0 |
| Single Family Housing | — | — | — | — | — | — | — | — | — | 1.19 |
| Total | — | — | — | — | — | — | — | — | — | 18.2 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | — | — | — | — | — | — | — | — | — | 17.0 |
| Single Family Housing | — | — | — | — | — | — | — | — | — | 1.19 |
| Total | — | — | — | — | — | — | — | — | — | 18.2 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | — | — | — | — | — | — | — | — | — | 2.81 |
| Single Family Housing | — | — | — | — | — | — | — | — | — | 0.20 |
| Total | — | — | — | — | — | — | — | — | — | 3.01 |

## 4.6. Refrigerant Emissions by Land Use

### 4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | — | — | — | — | — | — | — | — | 734 | 734 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Single Family Housing | — | — | — | — | — | — | — | — | 0.01 | 0.01 |
| Total | — | — | — | — | — | — | — | — | 734 | 734 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | — | — | — | — | — | — | — | — | 734 | 734 |
| Single Family Housing | — | — | — | — | — | — | — | — | 0.01 | 0.01 |
| Total | — | — | — | — | — | — | — | — | 734 | 734 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | — | — | — | — | — | — | — | — | 122 | 122 |
| Single Family Housing | — | — | — | — | — | — | — | — | < 0.005 | < 0.005 |
| Total | — | — | — | — | — | — | — | — | 122 | 122 |

## 4.6.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | — | — | — | — | — | — | — | — | 734 | 734 |
| Single Family Housing | — | — | — | — | — | — | — | — | 0.01 | 0.01 |
| Total | — | — | — | — | — | — | — | — | 734 | 734 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Convenience Market with Gas Pumps | — | — | — | — | — | — | — | — | 734 | 734 |
| Single Family Housing | — | — | — | — | — | — | — | — | 0.01 | 0.01 |
| Total | — | — | — | — | — | — | — | — | 734 | 734 |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Convenience Market with Gas Pumps | — | — | — | — | — | — | — | — | 122 | 122 |
| Single Family Housing | — | — | — | — | — | — | — | — | < 0.005 | < 0.005 |
| Total | — | — | — | — | — | — | — | — | 122 | 122 |

## 4.7. Offroad Emissions By Equipment Type

### 4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Equipment Type | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — |

### 4.7.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Equipment Type | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — |

## 4.8. Stationary Emissions By Equipment Type

### 4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Equipment Type | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — |

### 4.8.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Equipment Type | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Total | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — |

## 4.9. User Defined Emissions By Equipment Type

### 4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Equipment Type | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — |

### 4.9.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Equipment Type | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Total | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — |

## 4.10. Soil Carbon Accumulation By Vegetation Type

### 4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Vegetation | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — |

### 4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — |

### 4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Species | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Avoided | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — |
| Sequestered | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — |
| Removed | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — |
| — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Avoided | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — |
| Sequestered | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — |
| Removed | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — |
| — | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Avoided | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — |
| Sequestered | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — |
| Removed | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| — | — | — | — | — | — | — | — | — | — | — |

### 4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Vegetation | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — |

### 4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Land Use | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — |

### 4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

| Species | ROG | NOx | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — |
| Avoided | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — |
| Sequestered | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — |
| Removed | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — |
| — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — |
| Avoided | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — |
| Sequestered | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — |
| Removed | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — |
| — | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — |
| Avoided | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — |
| Sequestered | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — |
| Removed | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — |
| — | — | — | — | — | — | — | — | — | — | — |

# 5. Activity Data

## 5.1. Construction Schedule

| Phase Name | Phase Type | Start Date | End Date | Days Per Week | Work Days per Phase | Phase Description |
|---|---|---|---|---|---|---|
| Site Preparation | Site Preparation | 6/1/2023 | 6/2/2023 | 5.00 | 2.00 | — |
| Grading | Grading | 6/3/2023 | 6/8/2023 | 5.00 | 4.00 | — |
| Building Construction | Building Construction | 6/9/2023 | 3/14/2024 | 5.00 | 200 | — |
| Paving | Paving | 3/30/2024 | 4/12/2024 | 5.00 | 10.0 | — |
| Architectural Coating | Architectural Coating | 3/15/2024 | 3/28/2024 | 5.00 | 10.0 | — |
| Trenching | Trenching | 6/3/2023 | 6/8/2023 | 5.00 | 4.00 | — |

## 5.2. Off-Road Equipment

### 5.2.1. Unmitigated

| Phase Name | Equipment Type | Fuel Type | Engine Tier | Number per Day | Hours Per Day | Horsepower | Load Factor |
|---|---|---|---|---|---|---|---|
| Site Preparation | Graders | Diesel | Average | 1.00 | 8.00 | 148 | 0.41 |
| Site Preparation | Rubber Tired Dozers | Diesel | Average | 1.00 | 7.00 | 367 | 0.40 |
| Site Preparation | Tractors/Loaders/Backhoes | Diesel | Average | 1.00 | 8.00 | 84.0 | 0.37 |
| Grading | Graders | Diesel | Average | 1.00 | 8.00 | 148 | 0.41 |
| Grading | Rubber Tired Dozers | Diesel | Average | 1.00 | 8.00 | 367 | 0.40 |
| Grading | Tractors/Loaders/Backhoes | Diesel | Average | 2.00 | 7.00 | 84.0 | 0.37 |
| Building Construction | Cranes | Diesel | Average | 1.00 | 6.00 | 367 | 0.29 |
| Building Construction | Forklifts | Diesel | Average | 1.00 | 6.00 | 82.0 | 0.20 |
| Building Construction | Generator Sets | Diesel | Average | 1.00 | 8.00 | 14.0 | 0.74 |
| Building Construction | Tractors/Loaders/Backhoes | Diesel | Average | 1.00 | 6.00 | 84.0 | 0.37 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Building Construction | Welders | Diesel | Average | 3.00 | 8.00 | 46.0 | 0.45 |
| Paving | Cement and Mortar Mixers | Diesel | Average | 1.00 | 6.00 | 10.0 | 0.56 |
| Paving | Pavers | Diesel | Average | 1.00 | 6.00 | 81.0 | 0.42 |
| Paving | Paving Equipment | Diesel | Average | 1.00 | 8.00 | 89.0 | 0.36 |
| Paving | Rollers | Diesel | Average | 1.00 | 7.00 | 36.0 | 0.38 |
| Paving | Tractors/Loaders/Backhoes | Diesel | Average | 1.00 | 8.00 | 84.0 | 0.37 |
| Architectural Coating | Air Compressors | Diesel | Average | 1.00 | 6.00 | 37.0 | 0.48 |
| Trenching | Tractors/Loaders/Backhoes | Diesel | Average | 1.00 | 8.00 | 84.0 | 0.37 |
| Trenching | Tractors/Loaders/Backhoes | Diesel | Average | 1.00 | 8.00 | 84.0 | 0.37 |

## 5.2.2. Mitigated

| Phase Name | Equipment Type | Fuel Type | Engine Tier | Number per Day | Hours Per Day | Horsepower | Load Factor |
|---|---|---|---|---|---|---|---|
| Site Preparation | Graders | Diesel | Tier 4 Interim | 1.00 | 8.00 | 148 | 0.41 |
| Site Preparation | Rubber Tired Dozers | Diesel | Tier 4 Interim | 1.00 | 7.00 | 367 | 0.40 |
| Site Preparation | Tractors/Loaders/Backhoes | Diesel | Tier 4 Interim | 1.00 | 8.00 | 84.0 | 0.37 |
| Grading | Graders | Diesel | Tier 4 Interim | 1.00 | 8.00 | 148 | 0.41 |
| Grading | Rubber Tired Dozers | Diesel | Tier 4 Interim | 1.00 | 8.00 | 367 | 0.40 |
| Grading | Tractors/Loaders/Backhoes | Diesel | Tier 4 Interim | 2.00 | 7.00 | 84.0 | 0.37 |
| Building Construction | Cranes | Diesel | Tier 4 Interim | 1.00 | 6.00 | 367 | 0.29 |
| Building Construction | Forklifts | Diesel | Tier 4 Interim | 1.00 | 6.00 | 82.0 | 0.20 |
| Building Construction | Generator Sets | Diesel | Average | 1.00 | 8.00 | 14.0 | 0.74 |
| Building Construction | Tractors/Loaders/Backhoes | Diesel | Tier 4 Interim | 1.00 | 6.00 | 84.0 | 0.37 |
| Building Construction | Welders | Diesel | Tier 4 Interim | 3.00 | 8.00 | 46.0 | 0.45 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Paving | Cement and Mortar Mixers | Diesel | Average | 1.00 | 6.00 | 10.0 | 0.56 |
| Paving | Pavers | Diesel | Tier 4 Interim | 1.00 | 6.00 | 81.0 | 0.42 |
| Paving | Paving Equipment | Diesel | Tier 4 Interim | 1.00 | 8.00 | 89.0 | 0.36 |
| Paving | Rollers | Diesel | Tier 4 Interim | 1.00 | 7.00 | 36.0 | 0.38 |
| Paving | Tractors/Loaders/Backhoes | Diesel | Tier 4 Interim | 1.00 | 8.00 | 84.0 | 0.37 |
| Architectural Coating | Air Compressors | Diesel | Tier 4 Interim | 1.00 | 6.00 | 37.0 | 0.48 |
| Trenching | Tractors/Loaders/Backhoes | Diesel | Tier 4 Interim | 1.00 | 8.00 | 84.0 | 0.37 |
| Trenching | Tractors/Loaders/Backhoes | Diesel | Tier 4 Interim | 1.00 | 8.00 | 84.0 | 0.37 |

## 5.3. Construction Vehicles

### 5.3.1. Unmitigated

| Phase Name | Trip Type | One-Way Trips per Day | Miles per Trip | Vehicle Mix |
|---|---|---|---|---|
| Site Preparation | — | — | — | — |
| Site Preparation | Worker | 7.50 | 11.7 | LDA,LDT1,LDT2 |
| Site Preparation | Vendor | — | 8.40 | HHDT,MHDT |
| Site Preparation | Hauling | 0.00 | 20.0 | HHDT |
| Site Preparation | Onsite truck | — | — | HHDT |
| Grading | — | — | — | — |
| Grading | Worker | 10.0 | 11.7 | LDA,LDT1,LDT2 |
| Grading | Vendor | — | 8.40 | HHDT,MHDT |
| Grading | Hauling | 62.5 | 20.0 | HHDT |
| Grading | Onsite truck | — | — | HHDT |
| Building Construction | — | — | — | — |
| Building Construction | Worker | 1.49 | 11.7 | LDA,LDT1,LDT2 |

| | | | | |
|---|---|---|---|---|
| Building Construction | Vendor | 0.69 | 8.40 | HHDT,MHDT |
| Building Construction | Hauling | 68.0 | 20.0 | HHDT |
| Building Construction | Onsite truck | — | — | HHDT |
| Paving | — | — | — | — |
| Paving | Worker | 12.5 | 11.7 | LDA,LDT1,LDT2 |
| Paving | Vendor | — | 8.40 | HHDT,MHDT |
| Paving | Hauling | 90.0 | 20.0 | HHDT |
| Paving | Onsite truck | — | — | HHDT |
| Architectural Coating | — | — | — | — |
| Architectural Coating | Worker | 0.30 | 11.7 | LDA,LDT1,LDT2 |
| Architectural Coating | Vendor | — | 8.40 | HHDT,MHDT |
| Architectural Coating | Hauling | 0.00 | 20.0 | HHDT |
| Architectural Coating | Onsite truck | — | — | HHDT |
| Trenching | — | — | — | — |
| Trenching | Worker | 5.00 | 11.7 | LDA,LDT1,LDT2 |
| Trenching | Vendor | — | 8.40 | HHDT,MHDT |
| Trenching | Hauling | 0.00 | 20.0 | HHDT |
| Trenching | Onsite truck | — | — | HHDT |

## 5.3.2. Mitigated

| Phase Name | Trip Type | One-Way Trips per Day | Miles per Trip | Vehicle Mix |
|---|---|---|---|---|
| Site Preparation | — | — | — | — |
| Site Preparation | Worker | 7.50 | 11.7 | LDA,LDT1,LDT2 |
| Site Preparation | Vendor | — | 8.40 | HHDT,MHDT |
| Site Preparation | Hauling | 0.00 | 20.0 | HHDT |
| Site Preparation | Onsite truck | — | — | HHDT |
| Grading | — | — | — | — |

| | | | | |
|---|---|---|---|---|
| Grading | Worker | 10.0 | 11.7 | LDA,LDT1,LDT2 |
| Grading | Vendor | — | 8.40 | HHDT,MHDT |
| Grading | Hauling | 62.5 | 20.0 | HHDT |
| Grading | Onsite truck | — | — | HHDT |
| Building Construction | — | — | — | — |
| Building Construction | Worker | 1.49 | 11.7 | LDA,LDT1,LDT2 |
| Building Construction | Vendor | 0.69 | 8.40 | HHDT,MHDT |
| Building Construction | Hauling | 68.0 | 20.0 | HHDT |
| Building Construction | Onsite truck | — | — | HHDT |
| Paving | — | — | — | — |
| Paving | Worker | 12.5 | 11.7 | LDA,LDT1,LDT2 |
| Paving | Vendor | — | 8.40 | HHDT,MHDT |
| Paving | Hauling | 90.0 | 20.0 | HHDT |
| Paving | Onsite truck | — | — | HHDT |
| Architectural Coating | — | — | — | — |
| Architectural Coating | Worker | 0.30 | 11.7 | LDA,LDT1,LDT2 |
| Architectural Coating | Vendor | — | 8.40 | HHDT,MHDT |
| Architectural Coating | Hauling | 0.00 | 20.0 | HHDT |
| Architectural Coating | Onsite truck | — | — | HHDT |
| Trenching | — | — | — | — |
| Trenching | Worker | 5.00 | 11.7 | LDA,LDT1,LDT2 |
| Trenching | Vendor | — | 8.40 | HHDT,MHDT |
| Trenching | Hauling | 0.00 | 20.0 | HHDT |
| Trenching | Onsite truck | — | — | HHDT |

## 5.4. Vehicles

### 5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

## 5.5. Architectural Coatings

| Phase Name | Residential Interior Area Coated (sq ft) | Residential Exterior Area Coated (sq ft) | Non-Residential Interior Area Coated (sq ft) | Non-Residential Exterior Area Coated (sq ft) | Parking Area Coated (sq ft) |
|---|---|---|---|---|---|
| Architectural Coating | 1,632 | 544 | 5,310 | 1,770 | — |

## 5.6. Dust Mitigation

### 5.6.1. Construction Earthmoving Activities

| Phase Name | Material Imported (cy) | Material Exported (cy) | Acres Graded (acres) | Material Demolished (sq. ft.) | Acres Paved (acres) |
|---|---|---|---|---|---|
| Site Preparation | — | — | 1.88 | 0.00 | — |
| Grading | 1,000 | 1,000 | 4.00 | 0.00 | — |
| Paving | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 |

### 5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

## 5.7. Construction Paving

| Land Use | Area Paved (acres) | % Asphalt |
|---|---|---|
| Convenience Market with Gas Pumps | 0.00 | 0% |
| Single Family Housing | 0.01 | 0% |

## 5.8. Construction Electricity Consumption and Emissions Factors

### kWh per Year and Emission Factor (lb/MWh)

| Year | kWh per Year | CO2 | CH4 | N2O |
|---|---|---|---|---|
| 2023 | 0.00 | 39.5 | 0.03 | < 0.005 |

| | | | | |
|---|---|---|---|---|
| 2024 | 0.00 | 39.5 | 0.03 | < 0.005 |

## 5.9. Operational Mobile Sources

### 5.9.1. Unmitigated

| Land Use Type | Trips/Weekday | Trips/Saturday | Trips/Sunday | Trips/Year | VMT/Weekday | VMT/Saturday | VMT/Sunday | VMT/Year |
|---|---|---|---|---|---|---|---|---|
| Convenience Market with Gas Pumps | 2,536 | 2,536 | 2,536 | 925,801 | 3,571 | 16,356 | 16,356 | 2,636,747 |
| Single Family Housing | 10.0 | 10.1 | 9.06 | 3,607 | 56.8 | 57.4 | 51.5 | 20,488 |

### 5.9.2. Mitigated

| Land Use Type | Trips/Weekday | Trips/Saturday | Trips/Sunday | Trips/Year | VMT/Weekday | VMT/Saturday | VMT/Sunday | VMT/Year |
|---|---|---|---|---|---|---|---|---|
| Convenience Market with Gas Pumps | 2,536 | 2,536 | 2,536 | 925,801 | 3,571 | 16,356 | 16,356 | 2,636,747 |
| Single Family Housing | 10.0 | 10.1 | 9.06 | 3,607 | 56.8 | 57.4 | 51.5 | 20,488 |

## 5.10. Operational Area Sources

### 5.10.1. Hearths

#### 5.10.1.1. Unmitigated

| Hearth Type | Unmitigated (number) |
|---|---|
| Single Family Housing | — |
| Wood Fireplaces | 0 |
| Gas Fireplaces | 0 |
| Propane Fireplaces | 0 |
| Electric Fireplaces | 0 |

| | |
|---|---|
| No Fireplaces | 0 |
| Conventional Wood Stoves | 0 |
| Catalytic Wood Stoves | 0 |
| Non-Catalytic Wood Stoves | 0 |
| Pellet Wood Stoves | 0 |

### 5.10.1.2. Mitigated

| Hearth Type | Unmitigated (number) |
|---|---|
| Single Family Housing | — |
| Wood Fireplaces | 0 |
| Gas Fireplaces | 0 |
| Propane Fireplaces | 0 |
| Electric Fireplaces | 0 |
| No Fireplaces | 0 |
| Conventional Wood Stoves | 0 |
| Catalytic Wood Stoves | 0 |
| Non-Catalytic Wood Stoves | 0 |
| Pellet Wood Stoves | 0 |

### 5.10.2. Architectural Coatings

| Residential Interior Area Coated (sq ft) | Residential Exterior Area Coated (sq ft) | Non-Residential Interior Area Coated (sq ft) | Non-Residential Exterior Area Coated (sq ft) | Parking Area Coated (sq ft) |
|---|---|---|---|---|
| 1632.1499999999999 | 544 | 5,310 | 1,770 | — |

### 5.10.3. Landscape Equipment

| Season | Unit | Value |
|---|---|---|
| Snow Days | day/yr | 0.00 |

| | | |
|---|---|---|
| Summer Days | day/yr | 180 |

### 5.10.4. Landscape Equipment - Mitigated

| Season | Unit | Value |
|---|---|---|
| Snow Days | day/yr | 0.00 |
| Summer Days | day/yr | 180 |

## 5.11. Operational Energy Consumption

### 5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

| Land Use | Electricity (kWh/yr) | CO2 | CH4 | N2O | Natural Gas (kBTU/yr) |
|---|---|---|---|---|---|
| Convenience Market with Gas Pumps | 181,901 | 39.5 | 0.0330 | 0.0040 | 102,643 |
| Single Family Housing | 18,086 | 39.5 | 0.0330 | 0.0040 | 0.00 |

### 5.11.2. Mitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

| Land Use | Electricity (kWh/yr) | CO2 | CH4 | N2O | Natural Gas (kBTU/yr) |
|---|---|---|---|---|---|
| Convenience Market with Gas Pumps | 181,901 | 39.5 | 0.0330 | 0.0040 | 102,643 |
| Single Family Housing | 18,086 | 39.5 | 0.0330 | 0.0040 | 0.00 |

## 5.12. Operational Water and Wastewater Consumption

### 5.12.1. Unmitigated

| Land Use | Indoor Water (gal/year) | Outdoor Water (gal/year) |
|---|---|---|

| | | |
|---|---|---|
| Convenience Market with Gas Pumps | 222,218 | 0.00 |
| Single Family Housing | 32,237 | 0.00 |

### 5.12.2. Mitigated

| Land Use | Indoor Water (gal/year) | Outdoor Water (gal/year) |
|---|---|---|
| Convenience Market with Gas Pumps | 222,218 | 0.00 |
| Single Family Housing | 32,237 | 0.00 |

## 5.13. Operational Waste Generation

### 5.13.1. Unmitigated

| Land Use | Waste (ton/year) | Cogeneration (kWh/year) |
|---|---|---|
| Convenience Market with Gas Pumps | 9.02 | 0.00 |
| Single Family Housing | 0.21 | 0.00 |

### 5.13.2. Mitigated

| Land Use | Waste (ton/year) | Cogeneration (kWh/year) |
|---|---|---|
| Convenience Market with Gas Pumps | 9.02 | 0.00 |
| Single Family Housing | 0.21 | 0.00 |

## 5.14. Operational Refrigeration and Air Conditioning Equipment

### 5.14.1. Unmitigated

| Land Use Type | Equipment Type | Refrigerant | GWP | Quantity (kg) | Operations Leak Rate | Service Leak Rate | Times Serviced |
|---|---|---|---|---|---|---|---|
| Convenience Market with Gas Pumps | Other commercial A/C and heat pumps | R-410A | 2,088 | < 0.005 | 4.00 | 4.00 | 18.0 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Convenience Market with Gas Pumps | Supermarket refrigeration and condensing units | R-404A | 3,922 | 26.5 | 16.5 | 16.5 | 18.0 |
| Single Family Housing | Average room A/C & Other residential A/C and heat pumps | R-410A | 2,088 | < 0.005 | 2.50 | 2.50 | 10.0 |
| Single Family Housing | Household refrigerators and/or freezers | R-134a | 1,430 | 0.12 | 0.60 | 0.00 | 1.00 |

### 5.14.2. Mitigated

| Land Use Type | Equipment Type | Refrigerant | GWP | Quantity (kg) | Operations Leak Rate | Service Leak Rate | Times Serviced |
|---|---|---|---|---|---|---|---|
| Convenience Market with Gas Pumps | Other commercial A/C and heat pumps | R-410A | 2,088 | < 0.005 | 4.00 | 4.00 | 18.0 |
| Convenience Market with Gas Pumps | Supermarket refrigeration and condensing units | R-404A | 3,922 | 26.5 | 16.5 | 16.5 | 18.0 |
| Single Family Housing | Average room A/C & Other residential A/C and heat pumps | R-410A | 2,088 | < 0.005 | 2.50 | 2.50 | 10.0 |
| Single Family Housing | Household refrigerators and/or freezers | R-134a | 1,430 | 0.12 | 0.60 | 0.00 | 1.00 |

## 5.15. Operational Off-Road Equipment

### 5.15.1. Unmitigated

| Equipment Type | Fuel Type | Engine Tier | Number per Day | Hours Per Day | Horsepower | Load Factor |
|---|---|---|---|---|---|---|

### 5.15.2. Mitigated

| Equipment Type | Fuel Type | Engine Tier | Number per Day | Hours Per Day | Horsepower | Load Factor |
|---|---|---|---|---|---|---|

## 5.16. Stationary Sources

### 5.16.1. Emergency Generators and Fire Pumps

| Equipment Type | Fuel Type | Number per Day | Hours per Day | Hours per Year | Horsepower | Load Factor |
|---|---|---|---|---|---|---|

### 5.16.2. Process Boilers

| Equipment Type | Fuel Type | Number | Boiler Rating (MMBtu/hr) | Daily Heat Input (MMBtu/day) | Annual Heat Input (MMBtu/yr) |
|---|---|---|---|---|---|

## 5.17. User Defined

| Equipment Type | Fuel Type |
|---|---|
| — | — |

## 5.18. Vegetation

### 5.18.1. Land Use Change

#### 5.18.1.1. Unmitigated

| Vegetation Land Use Type | Vegetation Soil Type | Initial Acres | Final Acres |
|---|---|---|---|

#### 5.18.1.2. Mitigated

| Vegetation Land Use Type | Vegetation Soil Type | Initial Acres | Final Acres |
|---|---|---|---|

### 5.18.1. Biomass Cover Type

#### 5.18.1.1. Unmitigated

| Biomass Cover Type | Initial Acres | Final Acres |
|---|---|---|

#### 5.18.1.2. Mitigated

| Biomass Cover Type | Initial Acres | Final Acres |
| --- | --- | --- |

### 5.18.2. Sequestration

#### 5.18.2.1. Unmitigated

| Tree Type | Number | Electricity Saved (kWh/year) | Natural Gas Saved (btu/year) |
| --- | --- | --- | --- |

#### 5.18.2.2. Mitigated

| Tree Type | Number | Electricity Saved (kWh/year) | Natural Gas Saved (btu/year) |
| --- | --- | --- | --- |

# 6. Climate Risk Detailed Report

## 6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

| Climate Hazard | Result for Project Location | Unit |
| --- | --- | --- |
| Temperature and Extreme Heat | 11.2 | annual days of extreme heat |
| Extreme Precipitation | 14.1 | annual days with precipitation above 20 mm |
| Sea Level Rise | 0.00 | meters of inundation depth |
| Wildfire | 0.00 | annual hectares burned |

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider different increments of sea level rise coupled with extreme storm events. Users may select from four model simulations to view the range in potential inundation depth for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 50 meters (m) by 50 m, or about 164 feet (ft) by 164 ft.

Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

## 6.2. Initial Climate Risk Scores

| Climate Hazard | Exposure Score | Sensitivity Score | Adaptive Capacity Score | Vulnerability Score |
|---|---|---|---|---|
| Temperature and Extreme Heat | N/A | N/A | N/A | N/A |
| Extreme Precipitation | N/A | N/A | N/A | N/A |
| Sea Level Rise | N/A | N/A | N/A | N/A |
| Wildfire | N/A | N/A | N/A | N/A |
| Flooding | N/A | N/A | N/A | N/A |
| Drought | N/A | N/A | N/A | N/A |
| Snowpack Reduction | N/A | N/A | N/A | N/A |
| Air Quality Degradation | 0 | 0 | 0 | N/A |

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

## 6.3. Adjusted Climate Risk Scores

| Climate Hazard | Exposure Score | Sensitivity Score | Adaptive Capacity Score | Vulnerability Score |
|---|---|---|---|---|
| Temperature and Extreme Heat | N/A | N/A | N/A | N/A |
| Extreme Precipitation | N/A | N/A | N/A | N/A |
| Sea Level Rise | N/A | N/A | N/A | N/A |
| Wildfire | N/A | N/A | N/A | N/A |
| Flooding | N/A | N/A | N/A | N/A |
| Drought | N/A | N/A | N/A | N/A |
| Snowpack Reduction | N/A | N/A | N/A | N/A |

| | | | | |
|---|---|---|---|---|
| Air Quality Degradation | 1 | 1 | 1 | 2 |

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

## 6.4. Climate Risk Reduction Measures

# 7. Health and Equity Details

## 7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

| Indicator | Result for Project Census Tract |
|---|---|
| Exposure Indicators | — |
| AQ-Ozone | 6.38 |
| AQ-PM | 6.51 |
| AQ-DPM | 17.1 |
| Drinking Water | 18.4 |
| Lead Risk Housing | 51.0 |
| Pesticides | 59.7 |
| Toxic Releases | 2.25 |
| Traffic | 33.5 |
| Effect Indicators | — |
| CleanUp Sites | 61.8 |
| Groundwater | 95.8 |
| Haz Waste Facilities/Generators | 85.4 |
| Impaired Water Bodies | 66.7 |
| Solid Waste | 89.8 |

| | |
|---|---|
| Sensitive Population | — |
| Asthma | 75.9 |
| Cardio-vascular | 83.9 |
| Low Birth Weights | 22.6 |
| Socioeconomic Factor Indicators | — |
| Education | 70.2 |
| Housing | 47.1 |
| Linguistic | 59.8 |
| Poverty | 52.7 |
| Unemployment | 49.9 |

## 7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

| Indicator | Result for Project Census Tract |
|---|---|
| Economic | — |
| Above Poverty | 44.61696394 |
| Employed | 64.05748749 |
| Median HI | 56.24278198 |
| Education | — |
| Bachelor's or higher | 31.64378288 |
| High school enrollment | 100 |
| Preschool enrollment | 20.18478121 |
| Transportation | — |
| Auto Access | 65.16104196 |
| Active commuting | 56.0246375 |
| Social | — |
| 2-parent households | 22.53304247 |

| | |
|---|---|
| Voting | 73.68150905 |
| Neighborhood | — |
| Alcohol availability | 59.43795714 |
| Park access | 25.83087386 |
| Retail density | 18.69626588 |
| Supermarket access | 40.40805851 |
| Tree canopy | 36.75093032 |
| Housing | — |
| Homeownership | 44.89926857 |
| Housing habitability | 50.0449121 |
| Low-inc homeowner severe housing cost burden | 37.88014885 |
| Low-inc renter severe housing cost burden | 69.16463493 |
| Uncrowded housing | 37.31553959 |
| Health Outcomes | — |
| Insured adults | 45.18157321 |
| Arthritis | 84.5 |
| Asthma ER Admissions | 26.4 |
| High Blood Pressure | 94.2 |
| Cancer (excluding skin) | 74.5 |
| Asthma | 32.2 |
| Coronary Heart Disease | 85.5 |
| Chronic Obstructive Pulmonary Disease | 56.7 |
| Diagnosed Diabetes | 80.8 |
| Life Expectancy at Birth | 34.2 |
| Cognitively Disabled | 10.2 |
| Physically  Disabled | 32.1 |
| Heart Attack ER Admissions | 33.4 |

| | |
|---|---|
| Mental Health Not Good | 35.7 |
| Chronic Kidney Disease | 85.5 |
| Obesity | 54.6 |
| Pedestrian Injuries | 63.5 |
| Physical Health Not Good | 53.6 |
| Stroke | 84.7 |
| Health Risk Behaviors | — |
| Binge Drinking | 17.1 |
| Current Smoker | 32.2 |
| No Leisure Time for Physical Activity | 56.5 |
| Climate Change Exposures | — |
| Wildfire Risk | 0.0 |
| SLR Inundation Area | 0.0 |
| Children | 69.7 |
| Elderly | 76.6 |
| English Speaking | 63.9 |
| Foreign-born | 43.9 |
| Outdoor Workers | 19.6 |
| Climate Change Adaptive Capacity | — |
| Impervious Surface Cover | 74.3 |
| Traffic Density | 32.5 |
| Traffic Access | 52.0 |
| Other Indices | — |
| Hardship | 60.5 |
| Other Decision Support | — |
| 2016 Voting | 67.8 |

## 7.3. Overall Health & Equity Scores

| Metric | Result for Project Census Tract |
|---|---|
| CalEnviroScreen 4.0 Score for Project Location (a) | 62.0 |
| Healthy Places Index Score for Project Location (b) | 51.0 |
| Project Located in a Designated Disadvantaged Community (Senate Bill 535) | No |
| Project Located in a Low-Income Community (Assembly Bill 1550) | No |
| Project Located in a Community Air Protection Program Community (Assembly Bill 617) | No |

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

## 7.4. Health & Equity Measures

No Health & Equity Measures selected.

## 7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

## 7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

# 8. User Changes to Default Data

| Screen | Justification |
|---|---|
| Characteristics: Utility Information | Santa Rosa Default Power provider is Sonoma Clean Power. |
| Land Use | Total lot acreage from project description. Total square footages from project plans and trip generation. |
| Construction: Construction Phases | Defaults based on provided land uses from project applicant. |
| Construction: Off-Road Equipment | Defaults. |
| Construction: Trips and VMT | Building const = est 34 concrete truck round trips, Paving = est 45 asphalt truck round trips. |
| Operations: Vehicle Data | Provided trip gen. |
| Operations: Hearths | No hearths. |

| | |
|---|---|
| Operations: Energy Use | Santa Rosa REACH code - all electric new residential construction - convert natural gas to electricity. |
| Operations: Water and Waste Water | Wastewater 100% aerobic, no septic tanks or lagoons. |

## Attachment 3: Project Construction and Operation Emissions and Health Risk Calculations

## Construction Health Risk Information

**Santa Rosa Gas Station - Santa Rosa, CA**

**DPM Construction Emissions and Modeling Emission Rates - Unmitigated**

| Construction Year | Activity | DPM (ton/year) | Source Type | No. Sources | DPM Emissions (lb/yr) | (lb/hr) | (g/s) | Emissions per Point Source (g/s) |
|---|---|---|---|---|---|---|---|---|
| ***2023*** | Construction | 0.0413 | Point | 88 | 82.6 | 0.02514 | 3.17E-03 | **3.60E-05** |
| ***2023*** | Construction | 0.0184 | Point | 88 | 36.8 | 0.01120 | 1.41E-03 | **1.60E-05** |
| ***Total*** | | ***0.060*** | | ***176*** | ***119.4*** | ***0.0363*** | ***0.0046*** | |

| | | |
|---|---|---|
| hr/day = | 9 | (7am - 4pm) |
| days/yr = | 365 | |
| hours/year = | 3285 | |

**PM2.5 Fugitive Dust Construction Emissions for Modeling - Unmitigated**

| Construction Year | Activity | Area Source | PM2.5 Emissions (ton/year) | (lb/yr) | (lb/hr) | (g/s) | Modeled Area ($m^2$) | DPM Emission Rate $g/s/m^2$ |
|---|---|---|---|---|---|---|---|---|
| ***2023*** | Construction | 23_FUG | 0.01044 | 20.9 | 0.00636 | 8.01E-04 | 4,341 | **1.84E-07** |
| ***2023*** | Construction | 24_FUG | 0.000030 | 0.1 | 0.00002 | 2.30E-06 | 4,341 | **5.30E-10** |
| ***Total*** | | | ***0.010*** | ***20.940*** | ***0.006*** | ***0.001*** | | |

| | | |
|---|---|---|
| hr/day = | 9 | (7am - 4pm) |
| days/yr = | 365 | |
| hours/year = | 3285 | |

**Santa Rosa Gas Station - Santa Rosa, CA**
**Construction Health Impacts Summary**

**Maximum Impacts at Construction MEI Location - Uncontrolled**

| Emissions Year | Maximum Concentrations: Exhaust PM10/DPM ($\mu g/m^3$) | Fugitive PM2.5 ($\mu g/m^3$) | Cancer Risk (per million): Child | Adult | Hazard Index (-) | Maximum Annual PM2.5 Concentration ($\mu g/m^3$) |
|---|---|---|---|---|---|---|
| 2023 | 0.0290 | 0.0375 | 5.15 | 0.08 | 0.006 | 0.07 |
| 2024 | 0.0073 | 0.0094 | 1.19 | 0.02 | 0.001 | 0.02 |
| **Total** | - | - | **6.3** | **0.1** | - | - |
| **Maximum** | 0.0290 | 0.0375 | **-** | **-** | **0.006** | **0.07** |

**Santa Rosa Gas Station - Santa Rosa, CA - Uncontrolled Emissions**
**Maximum DPM Cancer Risk Calculations From Construction**
**Impacts at Off-Site Receptors-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 - 9 | 2 - 16 | 16 - 30 |
| Parameter | | | | | |
| ASF = | 10 | 10 | 3 | 3 | 1 |
| CPF = | 1.10E+00 | 1.10E+00 | 1.10E+00 | 1.10E+00 | 1.10E+00 |
| DBR* = | 361 | 1090 | 631 | 572 | 261 |
| A = | 1 | 1 | 1 | 1 | 1 |
| EF = | 350 | 350 | 350 | 350 | 350 |
| AT = | 70 | 70 | 70 | 70 | 70 |
| FAH = | 1.00 | 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 | at MEI | |
| Exposure | Duration | | DPM Conc (ug/m3) | | Sensitivity | Risk | DPM Conc (ug/m3) | | Sensitivity | Risk | Fugitive | Total |
| Year | (years) | Age | Year | Annual | Factor | (per million) | Year | Annual | Factor | (per million) | PM2.5 | PM2.5 |
| 0 | 0.25 | -0.25 - 0* | 2023 | 0.0290 | 10 | 0.39 | - | - | - | - | | |
| 1 | 1 | 0 - 1 | 2023 | 0.0290 | 10 | 4.76 | 2023 | 0.0290 | 1 | 0.08 | 0.0375 | 0.0664 |
| 2 | 1 | 1 - 2 | 2024 | 0.0073 | 10 | 1.19 | 2024 | 0.0073 | 1 | 0.02 | 0.0094 | 0.0167 |
| 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** | | | | | | **6.34** | | | | **0.10** | | |

* Third trimester of pregnancy

# Fuel Station Emission Calculations

**Santa Rosa Gas Station - TOG and TAC Emissions From Gasoline**

**Gas Station with EVR Phase I & EVR Phase II Controls**

**Proposed Annual Gasoline Throughput = 438,000 gallons/year**

| Operation Schedule |
|---|
| days per year = 365 |
| hours per day = 24 |

**TOG Emission Factors and Annual Emissions from Gasoline**

| Emission Source | TOG[1] Emission Factor (lb/$10^3$ gallon) | TOG Annual Emissions (lb/year) |
|---|---|---|
| Fueling[2] | | |
| Non-ORVR Vehicles | 0.42 | 16.6 |
| ORVR Vehicles | 0.021 | 8.4 |
| Bulk Transfer Losses | 0.15 | 65.7 |
| Pressure Driven Losses | 0.024 | 10.5 |
| Fueling - Spillage | 0.24 | 105.1 |
| Gasoline Hose Losses | 0.009 | 3.9 |
| **Total[2]** | **0.480** | **210.2** |

TOG = total organic gas

ORVR = onboard refueling vapor recovery

1. Emission factors from CARB "Revised Emissions Factors for Gasoline Marketing Operations at California Gasoline Dispensing Facilities". December 23, 2013 (CARB, 2013). Assumes use of enhanced vapor recovery systems.
2. Fueling emissions and total TOG emission factor utilize on CARB data for 2025 of 91% of vehicles use ORVR (CARB, 2013).

**Average Annual TAC Emissions**

| Pollutant | Average TAC Weight % in Gasoline Liquid[1] | AverageTAC Weight % in Gasoline Vapor[1] | Refueling and Hose Losses (vapor) (lb/year) | Spillage Losses (liquid) (lb/year) | Tank Transfer Losses (vapor) (lb/year) | Tank Pressure Losses (vapor) (lb/year) | Total Annual Average Emissions (lb/year) |
|---|---|---|---|---|---|---|---|
| TOG | | | 28.9 | 105.1 | 65.7 | 10.5 | 210.2 |
| Benzene | 0.707 | 0.457 | 0.13 | 0.74 | 0.30 | 0.05 | 1.2 |
| Ethyl Benzene | 1.29 | 0.107 | 0.03 | 1.36 | 0.07 | 0.01 | 1.5 |
| n-Hexane | 1.86 | 1.82 | 0.53 | 1.96 | 1.20 | 0.19 | 3.9 |
| Naphthalene | 0.174 | 0.000445 | 0.00 | 0.18 | 0.00 | 0.00 | 0.2 |
| Xylenes | 5.63 | 1.11 | 0.32 | 5.92 | 0.73 | 0.12 | 7.1 |
| Toluene | 6.59 | 0.409 | 0.12 | 6.93 | 0.27 | 0.04 | 7.4 |

1. Weighted average Winter/Summer speciation weight percents for chronic health effects from CARB 2022 "Gasoline Service Station Industrywide Risk Assessment Technical Guidance"

**Average Hourly TAC Emissions for Evaluating Chronic Health Effects**

| TAC | Average TAC Weight % in Gasoline Liquid[1] | AverageTAC Weight % in Gasoline Vapor[1] | Refueling and Hose Losses (vapor) (lb/hr) | Spillage Losses (liquid) (lb/hr) | Tank Transfer Losses (vapor) (lb/hr) | Tank Pressure Losses (vapor) (lb/hr) | Total Annual Average Emissions (lb/hr) |
|---|---|---|---|---|---|---|---|
| Benzene | 0.707 | 0.457 | 1.51E-05 | 8.48E-05 | 3.43E-05 | 5.48E-06 | 1.40E-04 |
| Ethyl Benzene | 1.29 | 0.107 | 3.53E-06 | 1.55E-04 | 8.03E-06 | 1.28E-06 | 1.68E-04 |
| n-Hexane | 1.86 | 1.82 | 6.00E-05 | 2.23E-04 | 1.37E-04 | 2.18E-05 | 4.42E-04 |
| Naphthalene | 0.174 | 0.000445 | 1.47E-08 | 2.09E-05 | 3.34E-08 | 5.34E-09 | 2.09E-05 |
| Xylenes | 5.63 | 1.11 | 3.66E-05 | 6.76E-04 | 8.33E-05 | 1.33E-05 | 8.09E-04 |
| Toluene | 6.59 | 0.409 | 1.35E-05 | 7.91E-04 | 3.07E-05 | 4.91E-06 | 8.40E-04 |

1. Weighted average Winter/Summer speciation weight percents for chronic health effects from CARB 2022 "Gasoline Service Staation Industrywide Risk Assessment Technical Guidance"

**Maximum Hourly TAC Emissions for Evaluating Acute Health Effects**

| TAC | Average TAC Weight % in Gasoline Liquid[1] | AverageTAC Weight % in Gasoline Vapor[1] | Maximum Hourly Tank Loading (gal/hr)[2] | Maximum Hourly Dispensing Rate (gal/hr)[2] | Refueling and Hose Losses (vapor) (lb/hr) | Spillage Losses (liquid) (lb/hr) | Tank Transfer Losses (vapor) (lb/hr) | Tank Pressure Losses (vapor) (lb/hr) |
|---|---|---|---|---|---|---|---|---|
| Benzene | 0.702 | 0.549 | 8,800 | 500 | 1.81E-04 | 8.42E-04 | 7.25E-03 | 1.16E-03 |
| Xylenes | 5.80 | 1.35 | 8,800 | 500 | 4.45E-04 | 6.96E-03 | 1.78E-02 | 2.85E-03 |
| Toluene | 6.91 | 0.509 | 8,800 | 500 | 1.68E-04 | 8.29E-03 | 6.72E-03 | 1.08E-03 |

1. Summer-only speciation profiles used to calculate weight percents for acute health effects from CARB 2022 "Gasoline Service Station Industrywide Risk Assessment Technical Guidelines"
2. Maximum hourly tank loading and dispensing rates from CARB 2022 "Gasoline Service Station Industrywide Risk Assessment Technical Guidance"

**Gas Station Modeling - Volume Source Parameters**

| Emission Source | Number of Volume Sources | Volume Source Dimensions (meters) Length | Width | Height | Volume Source Release Height (meters) |
|---|---|---|---|---|---|
| Refueling and Hose Losses | 2 | 12.5 | 12.5 | 5.5 | 1.5 |
| Spillage Losses | 2 | 12.5 | 12.5 | 5.5 | 1 |

**Gas Station Modeling - Point Source Parameters**

| Emission Source | Number of Sources | Height (meters) | Diameter (meters) | Temperature ($^{o}$K) | Velocity (meters/sec) |
|---|---|---|---|---|---|
| Tank Transfer Losses | 2 | 3.66 | 0.0508 | 291 | 0.001 |
| Tank Pressure Losses | 2 | 3.66 | 0.0508 | 289 | 0.001 |

CARB 2022. "Gasoline Service Station Industrywide Risk Assessment Technical Guidelines", Feb 18, 2022.

## Modeling Source Emission Rates

**Gas Station Modeling - Volume Source Parameters**

| Emission Source | Number of Volume Sources | Volume Source Dimensions (meters) Length | Width | Height | Volume Source Release Height (meters) |
|---|---|---|---|---|---|
| Refueling and Hose Losses | 2 | 12.5 | 12.5 | 5.5 | 1.5 |

| Emissions per Source | Chronic Health Effects | | Acute Health Effacts | |
|---|---|---|---|---|
| TAC | (lb/hr) | (g/s) | (lb/hr) | (g/s) |
| Benzene | 7.53E-06 | 9.49E-07 | 9.05E-05 | 1.14E-05 |
| Ethyl Benzene | 1.76E-06 | 2.22E-07 | - | - |
| n-Hexane | 3.00E-05 | 3.78E-06 | - | - |
| Naphthalene | 7.33E-09 | 9.24E-10 | - | - |
| Xylenes | 1.83E-05 | 2.30E-06 | 2.22E-04 | 2.80E-05 |
| Toluene | 6.74E-06 | 8.49E-07 | 8.39E-05 | 1.06E-05 |

**Gas Station Modeling - Volume Source Parameters**

| Emission Source | Number of Volume Sources | Volume Source Dimensions (meters) Length | Width | Height | Volume Source Release Height (meters) |
|---|---|---|---|---|---|
| Spillage Losses | 2 | 12.5 | 12.5 | 5.5 | 1 |

| Emissions per Source | Chronic Health Effects | | Acute Health Effacts | |
|---|---|---|---|---|
| TAC | (lb/hr) | (g/s) | (lb/hr) | (g/s) |
| Benzene | 4.24E-05 | 5.34E-06 | 4.21E-04 | 5.31E-05 |
| Ethyl Benzene | 7.74E-05 | 9.75E-06 | - | - |
| n-Hexane | 1.12E-04 | 1.41E-05 | - | - |
| Naphthalene | 1.04E-05 | 1.32E-06 | - | - |
| Xylenes | 3.38E-04 | 4.26E-05 | 3.48E-03 | 4.38E-04 |
| Toluene | 3.95E-04 | 4.98E-05 | 4.15E-03 | 5.22E-04 |

**Gas Station Modeling - Point Source Parameters**

| Emission Source | Number of Sources | Height (meters) | Diameter (meters) | Temperature ($^oK$) | Velocity (meters/sec) |
|---|---|---|---|---|---|
| Tank Transfer Losses | 2 | 3.66 | 0.0508 | 291 | 0.001 |

| Emissions per Source | Chronic Health Effects | | Acute Health Effacts | |
|---|---|---|---|---|
| TAC | (lb/hr) | (g/s) | (lb/hr) | (g/s) |
| Benzene | 1.71E-05 | 2.16E-06 | 3.62E-03 | 4.57E-04 |
| Ethyl Benzene | 4.01E-06 | 5.06E-07 | - | - |
| n-Hexane | 6.83E-05 | 8.60E-06 | - | - |
| Naphthalene | 1.67E-08 | 2.10E-09 | - | - |
| Xylenes | 4.16E-05 | 5.24E-06 | 8.91E-03 | 1.12E-03 |
| Toluene | 1.53E-05 | 1.93E-06 | 3.36E-03 | 4.23E-04 |

| Emission Source | Number of Sources | Height (meters) | Diameter (meters) | Temperature ($^oK$) | Velocity (meters/sec) |
|---|---|---|---|---|---|
| Tank Pressure Losses | 2 | 3.66 | 0.0508 | 289 | 0.001 |

| Emissions per Source | Chronic Health Effects | | Acute Health Effects | |
|---|---|---|---|---|
| TAC | (lb/hr) | (g/s) | (lb/hr) | (g/s) |
| Benzene | 2.74E-06 | 3.45E-07 | 5.80E-04 | 7.30E-05 |
| Ethyl Benzene | 6.42E-07 | 8.09E-08 | - | - |
| n-Hexane | 1.09E-05 | 1.38E-06 | - | - |
| Naphthalene | 2.67E-09 | 3.36E-10 | - | - |
| Xylenes | 6.66E-06 | 8.39E-07 | 1.43E-03 | 1.80E-04 |
| Toluene | 2.45E-06 | 3.09E-07 | 5.38E-04 | 6.77E-05 |

# Vehicle Emissions Calculations and Source Parameter Information for Modeling

## *CT-EMFAC2107 2025 Emission Factors*

| | |
|---|---|
| File Name: | Sonoma (SF) - 2025 - Annual-BAAQMD_Trucks.EF |
| CT-EMFAC2017 Version: | 1.0.2.27401 |
| Run Date: | 2/2/2023 22:36 |
| Area: | Sonoma (SF) |
| Analysis Year: | 2025 |
| Season: | Annual |

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

| Vehicle Category | VMT Fraction Across Category | Diesel VMT Fraction Within Category | Gas VMT Fraction Within Category |
|---|---|---|---|
| Truck 1 | 0.02 | 0.581 | 0.419 |
| Truck 2 | 0.023 | 0.946 | 0.039 |
| Non-Truck | 0.957 | 0.017 | 0.955 |

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

| | | | |
|---|---|---|---|
| Road Type: | Major/Collector | | |
| Silt Loading Factor: | CARB | 0.032 g/m2 | |
| Precipitation Correction: | CARB | P = 69 day: | N = 365 days |

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

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

| Pollutant Name | <= 5 mph | 10 mph | 15 mph | 20 mph | 25 mph | 30 mph | 35 mph | 40 mph | 45 mph |
|---|---|---|---|---|---|---|---|---|---|
| PM2.5 | 0.009362 | 0.006139 | 0.004202 | 0.003028 | 0.002312 | 0.001874 | 0.001611 | 0.001469 | 0.001417 |
| TOG | 0.194841 | 0.128265 | 0.086463 | 0.061373 | 0.046651 | 0.037418 | 0.031495 | 0.027795 | 0.025707 |
| Diesel PM | 0.001544 | 0.001213 | 0.000928 | 0.000732 | 0.000616 | 0.000551 | 0.000524 | 0.000527 | 0.000558 |

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

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

| Pollutant Name | Emission Factor |
|---|---|
| TOG | 1.559267 |

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

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

| Pollutant Name | Emission Factor |
|---|---|
| PM2.5 | 0.002093 |

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

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

| Pollutant Name | Emission Factor |
|---|---|
| PM2.5 | 0.017404 |

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

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

| Pollutant Name | Emission Factor |
|---|---|
| PM2.5 | 0.014996 |

=============================END=====================================

## *EMFAC2021 Emission Factors for HHDT Trucks*

Source: EMFAC2021 (v1.0.2) Emission Rates
Region Type: County
Region: Sonoma
Calendar Year: 2025
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: g/mile for RUNEX, PMBW and PMTW, mph for Speed

| Region | Calendar Year | Vehicle Category | Model Year | Speed | Fuel | PM2.5_RUNEX | PM10_RUNEX | PM10_PMBW | PM2.5_PMBW |
|---|---|---|---|---|---|---|---|---|---|
| Sonoma | 2025 | HHDT | Aggregate | 5 | Diesel | 0.122610267 | 0.12815416 | 0.157640645 | 0.055174226 |
| Sonoma | 2025 | HHDT | Aggregate | 30 | Diesel | 0.012153024 | 0.01270253 | 0.137850008 | 0.048247503 |

*Fuel Truck and Customer Vehicles Emission Calculations*

**Santa Rosa Fuel Station - San Rosa**

**2025 Project Fuel Delivery Truck Travel and Idle DPM & PM2.5 Emissions**

**Truck Travel Emissions**

| Road Segment | Segment ID | Truck Trip Length (ft) | Truck Trip Length (mi) | No. of Lanes | Modeled Road Width (ft) | Modeled Road Width (m) | Release Height (m) | Percent of Annual Deliveries (%) | No. of Annual Trips | Travel Speed (mph) | DPM Emission Factor (g/mi) | Total PM2.5* Emission Factor (g/mi) | Truck Travel DPM & Total PM2.5 Emissions: DPM Daily (lb/day) | Total PM2.5 Daily (lb/day) | DPM Hourly (lb/hr) | Total PM2.5 Hourly (lb/hr) | DPM Annual (lb/year) | Total PM2.5 Annual (lb/year) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *On-Site Fuel Trucks* | | | | | | | | | | | | | | | | | | |
| On-Site Fuel Truck | OST | 434 | 0.08 | 1 | 12.0 | 3.7 | 3.4 | 100% | 67 | 5 | 0.12815 | 0.17778 | 4.25E-06 | 5.90E-06 | 1.77E-07 | 2.46E-07 | 1.55E-03 | 2.15E-03 |
| *Off-Site Fuel Trucks* | | | | | | | | | | | | | | | | | | |
| Wright Rd to SR-12 | SEG1 | 504 | 0.10 | 4 | 67.7 | 20.6 | 3.4 | 100% | 134 | 30 | 0.01270 | 0.08385 | 9.79E-07 | 6.46E-06 | 4.08E-08 | 2.69E-07 | 3.57E-04 | 2.36E-03 |

[a] Source Parameters from EPA *Transportation Conformity Guidance for Hot-Spot Analyses in PM2.5 and PM10 Nonattainment and Maintenace Areas* (2015)

* Total PM2.5 is the sum of the exhaust emissions, tire and brake wear emissions, and fugitive road dust

**On-Site Diesel Truck Idle Emissions**

| Location | Stack[a] Height (m) | Stack[a] Diameter (m) | Stack[a] Velocity (m/s) | Stack[a] Temp (°K) | No. of Annual Deliveries | No. of Modeled Emission Points | Idle Emissions Factor (g/hr) | Idle Emissions per Delivery (g/vehicle) | Total Idle Emissions: Daily (lb/day) | Hourly (lb/hr) | Annual (lb/year) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Tank Loading Area | 3.84 | 0.1 | 51.71 | 366 | 67 | 1 | 0.641 | 0.10680 | 4.31E-05 | 1.80E-06 | 0.0157 |

[a] Point source parameters from SJVAPCD *Guidance for Air Dispersion Modeling*.

**Trip Information and DPM/PM2.5 Emission Factors**

| | |
|---|---|
| Daily Truck Deliveries = | 67 |
| Operation Days/year = | 365 |
| Delivery Truck Hours (hrs/day) = | 24 |
| Truck Speed (mph) - On-site= | 5 |
| Truck Speed (mph) - Off-site= | 30 |
| DPM Emission Factor for HHDT @ 5 mph (g/mi) = | 0.12815 |
| DPM Emission Factor for HHDT @ 30 mph (g/mi) = | 0.01270 |
| PM2.5 Emission Factor for HHDT @ 5 mph (g/mi) = | 0.12261 |
| PM2.5 Emission Factor for HHDT @ 30 mph (g/mi) = | 0.01215 |
| PM2.5 Emission Factor for Fugitive Road Dust = | 0.01500 |

Trucks assumed to be heavy duty diesel (HHDT)

Truck exhaust, tire & brake wear emissions based on EMFAC2021 for 2025 with default HHDT fleet mix for BAAQMD.

Truck fugitive road dust from CTEMFAC-2017 for Sonoma County in 2025

Truck emissions (lb/hr) = EF (g/mi) * Road Length (mi) * No. Trips / Hours per day * conversion factors

| | |
|---|---|
| Annual Gas Gallons = | 438,000 |
| Annual Diesel Gallons = | 150,000 |
| Total Annual Fuel (gal) = | 588,000 |
| Annual Fuel Deliveries* = | 67 |

* Assumes 8,800 gal fuel truck

**<u>Idle DPM Emission Information (2025)</u>**

| | |
|---|---|
| DPM Emission Factor for HHDT @ 5 mph (g/mi) = | 0.12815 |
| HHDT Idle DPM Emission Rate (g/hr) = | 0.641 |
| Idle Time per Delivery (min) | 10 |

Idle emission factor (g/hr) = EF @5 mph (g/mi) * 5 mph

**Santa Rosa Fuel Station - Santa Rosa - Operational Emissions - Project Vehicle Travel**
**Diesel Vehicles**

| Route | Segment ID | Travel Distance (feet) | Travel Distance (mi) | No. of Lanes | Modeled Road Width (ft) | Modeled Road Width (m) | Release[1] Height (m) | Percent Project Vehicles (%) | Daily Trips | No. of Annual Project Vehicles | Travel[2] Speed (mph) | DPM[3] Emission Factor (g/VMT) | Annual DPM Emissions (lb/year) | Average Hourly[4] DPM Emissoins (lb/hr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *On-Site Vehicles* | | | | | | | | | *2,993* | | | | | |
| Gas Station - On-Site | OSC | 407 | 0.08 | 1 | 24.0 | 7.3 | 1.3 | 100% | 1,497 | 546,223 | 5 | 0.00154 | 0.14 | 1.64E-05 |
| *Off-Site Vehicles* | | | | | | | | | *1,506* | | | | | |
| Wright Rd to/from South | SEG2 | 1,156 | 0.22 | 4 | 67.7 | 20.6 | 1.3 | 5% | 75 | 27,485 | 30 | 0.00055 | 0.01 | 8.34E-07 |
| Sebastopol Rd to/from east | SEG3 | 1,862 | 0.35 | 4 | 67.7 | 20.6 | 1.3 | 15% | 226 | 82,454 | 30 | 0.00055 | 0.04 | 4.03E-06 |
| Fulton Rd to/from north | SEG4 | 1,156 | 0.22 | 4 | 67.7 | 20.6 | 1.3 | 80% | 1,205 | 439,752 | 40 | 0.00053 | 0.11 | 1.28E-05 |

[1] Source Parameters from EPA *Transportation Conformity Guidance for Hot-Spot Analyses in PM2.5 and PM10 Nonattainment and Maintenace Areas* (2015)
[2] Average travel speeds for on-site and off-site travel
[3] 2025 emission factors developed from CTEMFAC-2017 for Sonoma County
[4] Station operation assumed operate 24 hours per day, 365 days per year

| | |
|---|---|
| Total Daily Cust Trips = | 2,993 |
| Bypass Trips = | 1,497 |
| Project Residence Trips = | 10 |
| On-Site Project Trips = | 2,993 |
| Off-Site Project Trips[a] = | 1,506 |
| Days Annual Operation = | 365 |
| Daily Operation Hours (hrs/day) = | 24 |
| On-Site Annual Project Trips = | 1,092,445 |
| Off-Site Annual Project Trips[a] = | 549,690 |

[a] Off-site project trips do not include bypass trips

**Santa Rosa Fuel Station - Santa Rosa - Operational Emissions - Customer Vehicle Travel**
**Off-site Travel and at Station**

| | | | | | | | | | | | | Emissions Factors[3] | | | Annual Emissions (lb/year) | | | Average Hourly Emissions (lb/hr)[5] | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Route | Segment ID | Travel Distance (feet) | Travel Distance (miles) | No. of Lanes | Modeled Road Width (ft) | Modeled Road Width (m) | Release Height (m) | Percent Customer Vehicles (%) | Daily Trips | Annual Number Vehicles | Travel[2] Speed (mph) | Total[4] PM2.5 (g/VMT) | TOG Exhaust (g/VMT) | TOG Run Loss (g/VMT) | Total[4] PM2.5 | TOG Exhaust | TOG Running Loss | Total[4] PM2.5 | TOG Exhaust | TOG Running Loss | Total TOG |
| *On-Site Vehicles* | | | | | | | | | *2,993* | | | | | | | | | | | | |
| Gas Station - On-Site | OSC | 407 | 0.08 | 1 | 24.0 | 7.3 | 1.3 | 100% | 1,497 | 546,223 | 5 | 0.0289 | 0.1948 | 0.3119 | 2.68 | 18.1 | 29.0 | 3.06E-04 | 2.07E-03 | 3.31E-03 | 5.37E-03 |
| *Off-Site Vehicles* | | | | | | | | | *1,506* | | | | | | | | | | | | |
| Wright Rd to/from South | SEG2 | 1,156 | 0.22 | 4 | 67.7 | 20.6 | 1.3 | 5% | 75 | 27,485 | 30 | 0.0214 | 0.0374 | 0.0520 | 0.28 | 0.5 | 0.7 | 3.24E-05 | 5.67E-05 | 7.87E-05 | 1.35E-04 |
| Sebastopol Rd to/from east | SEG3 | 1,862 | 0.35 | 4 | 67.7 | 20.6 | 1.3 | 15% | 226 | 82,454 | 30 | 0.0214 | 0.0374 | 0.0520 | 1.37 | 2.4 | 3.3 | 1.56E-04 | 2.74E-04 | 3.80E-04 | 6.54E-04 |
| Fulton Rd to/from north | SEG4 | 1,156 | 0.22 | 4 | 67.7 | 20.6 | 1.3 | 80% | 1,205 | 439,752 | 40 | 0.0210 | 0.0278 | 0.0390 | 4.45 | 5.9 | 8.3 | 5.08E-04 | 6.73E-04 | 9.45E-04 | 1.62E-03 |

[1] Source Parameters from EPA *Transportation Conformity Guidance for Hot-Spot Analyses in PM2.5 and PM10 Nonattainment and Maintenace Areas* (2015)
[2] Average travel speed for on-site and off-site travel
[3] 2025 emission factors developed from CTEMFAC-2017 for Sonoma County
[4] Includes tire & brake wear, and fugitive road dust from vehicles
[5] Station operation assumed operate 24 hours per day, 365 days per year

| | |
|---|---|
| Total Daily Cust Trips = | 2,993 |
| Bypass Trips = | 1,497 |
| Project Residence Trips = | 10 |
| On-Site Project Trips = | 2,993 |
| Off-Site Project Trips[a] = | 1,506 |
| Days Annual Operation = | 365 |
| Daily Operation Hours (hrs/day) = | 24 |
| On-Site Annual Project Trips = | 1,092,445 |
| Off-Site Annual Project Trips[a] = | 549,690 |

[a] Off-site project trips do not include bypass trips

**Santa Rosa Fuel Station - Santa Rosa**
**2025 Customer Vehicle Idle Emissions**

**On-Site Vehicle Idle Emissions - DPM**

| Vehicle Type | No. of Annual Vehicles | Operation[1] Schedule (hrs/day) | Idle Emission Factor (g/hr) | Idle Emissions per Vehicle (g/vehicle/day) | Total Idle Emissions Daily (lb/day) | Hourly (lb/hr) | Annual (lb/year) | Total Emissions per Area (g/s-m2) |
|---|---|---|---|---|---|---|---|---|
| Customer | 546,223 | 24 | 0.0077 | 0.0004 | 1.27E-03 | 5.31E-05 | 0.4648 | 1.44E-08 |

[1] Station operation assumed operate 24 hours per day, 365 days per year

**On-Site Vehicle Idle Emissions - PM2.5**

| Vehicle Type | No. of Annual Vehicles | Operation[1] Schedule (hrs/day) | Idle Emission Factor (g/hr) | Idle Emissions per Vehicle (g/vehicle) | Total Idle Emissions Daily (lb/day) | Hourly (lb/hr) | Annual (lb/year) | Total Emissions per Area (g/s-m2) |
|---|---|---|---|---|---|---|---|---|
| Customer | 546,223 | 24 | 0.0468 | 0.0023 | 7.72E-03 | 3.22E-04 | 2.8185 | 8.73E-08 |

[1] Station operation assumed operate 24 hours per day, 365 days per year

**On-Site Vehicle Idle Emissions - TOG Exhaust**

| Vehicle Type | No. of Annual Vehicles | Operation[1] Schedule (hrs/day) | Idle Emission Factor (g/hr) | Idle Emissions per Vehicle (g/vehicle) | Total Idle Emissions Daily (lb/day) | Hourly (lb/hr) | Annual (lb/year) | Total Emissions per Area (g/s-m2) |
|---|---|---|---|---|---|---|---|---|
| Customer | 546,223 | 24 | 0.9742 | 0.0487 | 1.61E-01 | 6.70E-03 | 58.6579 | 1.82E-06 |

[1] Station operation assumed operate 24 hours per day, 365 days per year

**On-Site Vehicle Idle Emissions - TOG Running (Evaporative)**

| Vehicle Type | No. of Annual Vehicles | Operation[1] Schedule (hrs/day) | Idle Emission Factor (g/hr) | Idle Emissions per Vehicle (g/vehicle) | Total Idle Emissions Daily (lb/day) | Hourly (lb/hr) | Annual (lb/year) | Total Emissions per Area (g/s-m2) |
|---|---|---|---|---|---|---|---|---|
| Customer | 546,223 | 24 | 1.5593 | 0.0780 | 2.57E-01 | 1.07E-02 | 93.8851 | 2.91E-06 |

[1] Station operation assumed operate 24 hours per day, 365 days per year

**Idle Emisison Modeling - Source Parameters**

| Number of Area Sources | Area Source Dimensions (meters) Length | Width | Area (sq meters) | Area Source Height (meters) |
|---|---|---|---|---|
| 1 | 28.7 | 16.2 | 464.5 | 1.0 |

| Idle - Gasoline Emission Information (2025)* | DPM | PM2.5 | TOG Exhaust | TOG Evaporative[1] |
|---|---|---|---|---|
| Customer Vehicle Emission Factor @ 5 mph (g/mi) = | 0.00154 | 0.00936 | 0.19484 | - |
| Customer Vehicle Idle Emission Rate (g/hr) = | 0.0077 | 0.0468 | 0.9742 | 1.5593 |
| Idle Time per Vehicle (min) | 3 | 3 | 3 | 3 |

* Emission factors from CT-EMFAC-2017

[1] Emission factor in terms of g/veh-hour

| | |
|---|---|
| Total Daily Cust Trips = | 2,993 |
| Bypass Trips = | 1,497 |
| Project Residence Trips = | 10 |
| On-Site Project Trips = | 2,993 |
| Off-Site Project Trips[a] = | 1,506 |
| Days Annual Operation = | 365 |
| Daily Operation Hours (hrs/day) = | 24 |
| On-Site Annual Project Trips = | 1,092,445 |
| Off-Site Annual Project Trips[a] = | 549,690 |

[a] Off-site project trips do not include bypass trips

# Health Risk Calculations

## Santa Rosa Gas Station - Health Risk Summaries for Maximum Off-Site and On-Site Receptors

**Maximum Off-Site Health Risks Summary**

| Scenario | Cancer Risk (per million) | PM2.5 Concentration (ug/m3) | Maximum HI Acute | Maximum HI Chronic |
|---|---|---|---|---|
| Construction Only (2023-2024) | 6.34 | 0.066 | - | <0.01 |
| Operation (2025-2022) | | | | |
| GDF | 0.08 | - | 0.326 | <0.01 |
| Project Vehicles | 0.79 | 0.016 | 0.017 | <0.01 |
| GDF + Project Vehicles | 0.87 | 0.016 | 0.34 | <0.01 |
| **Construction & Operation[1]** | **7.21** | **0.066** | **0.34** | **<0.01** |
| | | | | |
| Operation Only 2025-2054) | | | | |
| GDF | 0.155 | - | 0.340 | <0.01 |
| Project Vehicles | 1.459 | 0.016 | <0.01 | <0.01 |
| **Total Operation Only[2]** | **1.61** | **0.016** | **0.34** | **<0.01** |

[1] Sum of all values for cancer risk. For PM2.5, chronic and accute non-cancer health effects it is the maximum of the sum of all values for any given year.

[2] Sum of all values for cancer risk, chronic and acute non-cancer health effects.

**On-Site Health Risks Summary**

| Scenario | Cancer Risk (per million) | PM2.5 Concentration (ug/m3) | Maximum HI Acute | Maximum HI Chronic |
|---|---|---|---|---|
| Operation (2025-2054) | | | | |
| GDF | 0.403 | - | 0.239 | <0.01 |
| Project Vehicles | 2.950 | 0.024 | 0.016 | <0.01 |
| **Total Operation[1]** | **3.35** | **0.024** | **0.255** | **<0.01** |

[1] Sum of all values for cancer risk, chronic and acute non-cancer health effects.

**Santa Rosa Gas Station - Project Construction & Operation**
**AERMOD Risk Modeling Parameters, Maximum TAC Concentrations & Non-Cancer Health Effects**
**Off-Site Residential Receptors - 1.5 meter Receptor Heights**

**Receptor Information**

| | |
|---|---|
| Number of Receptors | 45 |
| Receptor Height = | 1.5 meters |
| Receptor distances = | variable - at nearby residences |

**Meteorological Conditions**

| | |
|---|---|
| Sonoma County Airport Met Dat: | 2013-2017 |
| Land Use Classification | rural |
| Wind speed = | variable |
| Wind direction = | variable |

**Maximum Residential MEI Concentrations**

| TAC | TAC Concentration ($\mu g/m^3$) 2023 Max Period Average | 2024 Max Period Average | 2025 Max Period Average |
|---|---|---|---|
| DPM | 0.02896 | 0.00726 | 0.00114 |
| Benzene | 0.00000 | 0.00000 | 0.00178 |
| Ethylbenzene | 0.00000 | 0.00000 | 0.00216 |
| n-Hexane | 0.00000 | 0.00000 | 0.00563 |
| Naphthalene | 0.00000 | 0.00000 | 0.00027 |
| Xylene | 0.00000 | 0.00000 | 0.01041 |
| Toluene | 0.00000 | 0.00000 | 0.01084 |
| TOG Exhaust | 0.00000 | 0.00000 | 0.13137 |
| TOG Evaporative | 0.00000 | 0.00000 | 0.20759 |
| ***PM2.5*** | ***0.066*** | ***0.017*** | ***0.016*** |

**2023 - Maximum Non-Cancer Health Effects**

| TAC | Maximum Concentration 1-Hour ($\mu g/m^3$) | Maximum Concentration Period Ave ($\mu g/m^3$) | Hazard Index Acute | Hazard Index Chronic |
|---|---|---|---|---|
| DPM | - | 0.02896 | - | 5.79E-03 |
| Benzene | - | 0.00000 | - | - |
| Ethylbenzene | - | 0.00000 | - | - |
| n-Hexane | - | 0.00000 | - | - |
| Naphthalene | | 0.00000 | - | - |
| Xylene | - | 0.00000 | - | - |
| Toluene | - | 0.00000 | - | - |
| TOG Exhaust | - | 0.00000 | - | - |
| TOG Evaporative | - | 0.00000 | | |
| **Total** | | | **0.000** | **0.006** |

* Maximum for residential receptors

**2024 - Non-Cancer Health Effects**

| TAC | Maximum Concentration 1-Hour ($\mu g/m^3$) | Maximum Concentration Period Ave ($\mu g/m^3$) | Hazard Index Acute | Hazard Index Chronic |
|---|---|---|---|---|
| DPM | - | 0.00726 | - | 1.45E-03 |
| Benzene | - | 0.000000 | - | - |
| Ethylbenzene | - | 0.000000 | - | - |
| n-Hexane | - | 0.000000 | - | - |
| Naphthalene | | 0.000000 | - | - |
| Xylene | - | 0.000000 | - | - |
| Toluene | - | 0.000000 | - | - |
| TOG Exhaust | - | 0.000000 | - | - |
| TOG Evaporative | - | 0.00000 | | |
| **Total** | | | **0.000** | **0.001** |

* Maximum for residential receptors

**2025 - Non-Cancer Health Effects**

| TAC | Maximum Concentration 1-Hour ($\mu g/m^3$) | Maximum Concentration Period Ave ($\mu g/m^3$) | Hazard Index Acute | Hazard Index Chronic |
|---|---|---|---|---|
| DPM | - | 0.00114 | - | 2.28E-04 |
| Benzene | 8.73398 | 0.00178 | 3.23E-01 | 5.93E-04 |
| Ethylbenzene | - | 0.00216 | - | 1.08E-06 |
| n-Hexane | - | 0.00563 | - | 8.04E-07 |
| Naphthalene | - | 0.00027 | - | 3.00E-05 |
| Xylene | 22.30356 | 0.01041 | 1.01E-03 | 1.49E-05 |
| Toluene | 9.99192 | 0.01084 | 2.00E-03 | 2.58E-05 |
| TOG Exhaust | 7.0089 | 0.13137 | 2.13E-03 | 4.63E-04 |
| TOG Evaporative | 11.18181 | 0.20759 | 1.47E-02 | 1.73E-03 |
| **Total** | | | **0.343** | **0.003** |

* Maximum for residential receptors

| | | |
|---|---|---|
| **GDF** | **0.326** | **0.001** |
| **Proj Vehicles** | **0.017** | **0.002** |
| | **0.343** | |

**Santa Rosa Gas Station - Project Construction & Operation**
**Maximum Residential Cancer Risk from Project Construction & Operation**
**at Off-Site Residential MEI Location**
**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

**Values**

| | Infant/Child | | | Adult |
|---|---|---|---|---|
| **Age -->** | **3rd Trimester** | **0 to 2** | **2 to 16** | **17 - 70** |
| **Parameter** | | | | |
| 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

**Cancer Potency Factors and Reference Exposure Levels (REL)**

| | | REL ($\mu g/m^3$) | |
|---|---|---|---|
| **TAC** | **CPF** $(mg/kg\text{-}day)^{-1}$ | **Acute (1-hour)** | **Chronic (ann ave)** |
| DPM | 1.10E+00 | - | 5 |
| Benzene | 1.00E-01 | 27 | 3 |
| Ethylbenzene | 8.70E-03 | - | 2,000 |
| n-Hexane | | - | 7,000 |
| Naphthalene | 1.20E-01 | - | 9 |
| Xylene | | 22,000 | 700 |
| Toluene | | 5,000 | 420 |
| TOG Exhaust | 6.28E-03 | 3,283 | 284 |
| TOG Evaporative | 3.70E-04 | 762 | 120 |

**Project Construction & Operation Cancer Risk - at Residential MEI Receptor**

| Exposure Year Age | Initial Exposure Year | Exposure Duration (years) | Age Sensitivity Factor | Maximum - Exposure Information Annual Conc (ug/m3) DPM | Benzene | Ethyl-benzene | n-Hexane | Naph-thalene | Xylene | Toluene | TOG Exhaust | TOG Evaporative |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 2023 | 0.25 | 10 | 0.02896 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 0 - 1 | 2023 | 1 | 10 | 0.02896 | 0.00000 | 0.00000 | 0.000000 | 0.00000 | 0.00000 | 0.000000 | 0.00000 | 0.00000 |
| 1 < 2 | 2024 | 1 | 10 | 0.00726 | 0.00000 | 0.00000 | 0.000000 | 0.00000 | 0.00000 | 0.000000 | 0.00000 | 0.00000 |
| 2 < 16 | 2025 | 14 | 3 | 0.00114 | 0.00178 | 0.00216 | 0.005630 | 0.00027 | 0.01041 | 0.010840 | 0.13137 | 0.20759 |
| 16 - 70 | 2025 | 14 | 1 | 0.00114 | 0.00178 | 0.00216 | 0.005630 | 0.00027 | 0.01041 | 0.010840 | 0.13137 | 0.20759 |
| **Total Increased Cancer Risk** | | | | | | | | | | | | |

| Exposure Year Age | Cancer Risk (per million) DPM | Benzene | Ethyl-benzene | n-Hexane | Naph-thalene | Xylene | Toluene | TOG Exhaust | TOG Evaporative | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0.3938 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.39 |
| 0 - 1 | 4.7566 | 0.0000 | 0.00000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 4.76 |
| 1 < 2 | 1.1924 | 0.0000 | 0.00000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 1.19 |
| 2 < 16 | 0.4127 | 0.0586 | 0.00618 | 0.0000 | 0.0107 | 0.0000 | 0.0000 | 0.2716 | 0.0253 | 0.78 |
| 16 - 70 | 0.0458 | 0.0065 | 0.00069 | 0.0000 | 0.0012 | 0.0000 | 0.0000 | 0.0302 | 0.0028 | 0.09 |
| **Total Increased Cancer Risk** | **6.8014** | **0.0651** | **0.0069** | **0.0000** | **0.0118** | **0.0000** | **0.0000** | **0.3017** | **0.0281** | **7.2150** |

* Third trimester of pregnancy

**Santa Rosa Gas Station - Project Operation**
**AERMOD Risk Modeling Parameters, Maximum TAC Concentrations & Non-Cancer Health Effects**
**Off-Site Residential Receptors - 1.5 meter Receptor Heights**

**Receptor Information**

| | |
|---|---|
| Number of Receptors | 45 |
| Receptor Height = | 1.5 meters |
| Receptor distances = | variable - at nearby residences |

**Meteorological Conditions**

| | |
|---|---|
| Sonoma County Airport Met Da | 2013-2017 |
| Land Use Classification | rural |
| Wind speed = | variable |
| Wind direction = | variable |

**Residential MEI Concentrations**

| | TAC Concentration (µg/m$^3$) | | |
|---|---|---|---|
| | 2023 | 2024 | 2025 |
| TAC | Max Period Average | Max Period Average | Max Period Average |
| DPM | 0.00000 | 0.00000 | 0.00114 |
| Benzene | 0.00000 | 0.00000 | 0.00178 |
| Ethylbenzene | 0.00000 | 0.00000 | 0.00216 |
| n-Hexane | 0.00000 | 0.00000 | 0.00563 |
| Naphthalene | 0.00000 | 0.00000 | 0.00027 |
| Xylene | 0.00000 | 0.00000 | 0.01041 |
| Toluene | 0.00000 | 0.00000 | 0.01084 |
| TOG Exhaust | 0.00000 | 0.00000 | 0.13137 |
| TOG Evaporative | 0.00000 | 0.00000 | 0.20759 |
| ***PM2.5*** | ***0.000*** | ***0.000*** | ***0.01596*** |

**2023 - Maximum Non-Cancer Health Effects**

| | Maximum Concentration | | Hazard Index | |
|---|---|---|---|---|
| TAC | 1-Hour (µg/m$^3$) | Period Ave (µg/m$^3$) | Acute | Chronic |
| DPM | - | 0.00000 | - | 0.00E+00 |
| Benzene | - | 0.00000 | - | - |
| Ethylbenzene | - | 0.00000 | - | - |
| n-Hexane | - | 0.00000 | - | - |
| Naphthalene | | 0.00000 | - | - |
| Xylene | - | 0.00000 | - | - |
| Toluene | - | 0.00000 | - | - |
| TOG Exhaust | - | 0.00000 | - | - |
| TOG Evaporative | - | 0.00000 | | |
| **Total** | | | **0.000** | **0.000** |

* Maximum for residential receptors

**2024 - Non-Cancer Health Effects**

| | Maximum Concentration | | Hazard Index | |
|---|---|---|---|---|
| TAC | 1-Hour (µg/m$^3$) | Period Ave (µg/m$^3$) | Acute | Chronic |
| DPM | - | | - | 0.00E+00 |
| Benzene | - | - | - | - |
| Ethylbenzene | - | - | - | - |
| n-Hexane | - | - | - | - |
| Naphthalene | | | - | - |
| Xylene | - | - | - | - |
| Toluene | - | - | - | - |
| TOG Exhaust | - | - | - | - |
| TOG Evaporative | - | | | |
| **Total** | | | **0.000** | **0.000** |

* Maximum for residential receptors

**2025 - Non-Cancer Health Effects**

| | Maximum Concentration | | Hazard Index | |
|---|---|---|---|---|
| TAC | 1-Hour (µg/m$^3$) | Period Ave (µg/m$^3$) | Acute | Chronic |
| DPM | - | 0.00114 | - | 2.28E-04 |
| Benzene | 8.73398 | 0.00178 | 3.23E-01 | 5.93E-04 |
| Ethylbenzene | - | 0.00216 | - | 1.08E-06 |
| n-Hexane | - | 0.00563 | - | 8.04E-07 |
| Naphthalene | - | 0.00027 | - | 3.00E-05 |
| Xylene | 22.30356 | 0.01041 | 1.01E-03 | 1.49E-05 |
| Toluene | 9.99192 | 0.01084 | 2.00E-03 | 2.58E-05 |
| TOG Exhaust | 7.0089 | 0.13137 | 2.13E-03 | 4.63E-04 |
| TOG Evaporative | 11.18181 | 0.20759 | 1.47E-02 | 1.73E-03 |
| **Total** | | | **0.343** | **0.003** |
| | | **GDF** | **0.326** | **0.001** |
| | | **Proj Vehicles** | **0.017** | **0.002** |

* Maximum for residential receptors

**Santa Rosa Gas Station - Project Operation**
**Maximum Residential Cancer Risk from Project Operation**
**at Off-Site Residential MEI Location**
**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

**Values**

| | Infant/Child | | | Adult |
|---|---|---|---|---|
| **Age -->** | **3rd Trimester** | **0 to 2** | **2 to 16** | **17 - 70** |
| **Parameter** | | | | |
| 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

**Cancer Potency Factors and Reference Exposure Levels (REL)**

| TAC | CPF $(mg/kg\text{-}day)^{-1}$ | REL ($\mu g/m^3$) Acute (1-hour) | REL ($\mu g/m^3$) Chronic (ann ave) |
|---|---|---|---|
| DPM | 1.10E+00 | - | 5 |
| Benzene | 1.00E-01 | 27 | 3 |
| Ethylbenzene | 8.70E-03 | - | 2,000 |
| n-Hexane | | - | 7,000 |
| Naphthalene | 1.20E-01 | - | 9 |
| Xylene | | 22,000 | 700 |
| Toluene | | 5,000 | 420 |
| TOG Exhaust | 6.28E-03 | 3,283 | 284 |
| TOG Evaporative | 3.70E-04 | 762 | 120 |

**Project Operation Cancer Risk - at Residential MEI Receptor**

| Exposure Year Age | Initial Exposure Year | Exposure Duration (years) | Age Sensitivity Factor | Maximum - Exposure Information: Annual Conc (ug/m3) DPM | Benzene | Ethyl-benzene | n-Hexane | Naph-thalene | Xylene | Toluene | TOG Exhaust | TOG Evaporative |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 2025 | 0.25 | 10 | 0.00114 | 0.00178 | 0.00216 | 0.00563 | 0.00027 | 0.01041 | 0.01084 | 0.13137 | 0.20759 |
| 0 - 1 | 2025 | 1 | 10 | 0.00114 | 0.00178 | 0.00216 | 0.005630 | 0.00027 | 0.01041 | 0.010840 | 0.13137 | 0.20759 |
| 1 < 2 | 2025 | 1 | 10 | 0.00114 | 0.00178 | 0.00216 | 0.005630 | 0.00027 | 0.01041 | 0.010840 | 0.13137 | 0.20759 |
| 2 < 16 | 2025 | 14 | 3 | 0.00114 | 0.00178 | 0.00216 | 0.005630 | 0.00027 | 0.01041 | 0.010840 | 0.13137 | 0.20759 |
| 16 - 70 | 2025 | 14 | 1 | 0.00114 | 0.00178 | 0.00216 | 0.005630 | 0.00027 | 0.01041 | 0.010840 | 0.13137 | 0.20759 |
| **Total Increased Cancer Risk** | | | | | | | | | | | | |

| Exposure Year Age | Cancer Risk (per million) DPM | Benzene | Ethyl-benzene | n-Hexane | Naph-thalene | Xylene | Toluene | TOG Exhaust | TOG Evaporative | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0.0155 | 0.0022 | 0.0002 | 0.0000 | 0.0004 | 0.0000 | 0.0000 | 0.0102 | 0.0010 | 0.03 |
| 0 - 1 | 0.1872 | 0.0266 | 0.00281 | 0.0000 | 0.0048 | 0.0000 | 0.0000 | 0.1232 | 0.0115 | 0.36 |
| 1 < 2 | 0.1872 | 0.0266 | 0.00281 | 0.0000 | 0.0048 | 0.0000 | 0.0000 | 0.1232 | 0.0115 | 0.36 |
| 2 < 16 | 0.4127 | 0.0586 | 0.00618 | 0.0000 | 0.0107 | 0.0000 | 0.0000 | 0.2716 | 0.0253 | 0.78 |
| 16 - 70 | 0.0458 | 0.0065 | 0.00069 | 0.0000 | 0.0012 | 0.0000 | 0.0000 | 0.0302 | 0.0028 | 0.09 |
| **Total Increased Cancer Risk** | **0.85** | **0.12** | **0.01** | **0.00** | **0.02** | **0.00** | **0.00** | **0.56** | **0.05** | **1.614** |

* Third trimester of pregnancy

**Santa Rosa Gas Station - Project Construction & Operation**
**AERMOD Risk Modeling Parameters, Maximum TAC Concentrations & Non-Cancer Health Effects**
**On-Site Residential Receptor - 5.8 meter Receptor Height**

**Receptor Information**

| | |
|---|---|
| Number of Receptors | 1 |
| Receptor Height = | 5.8 meters |
| Receptor distances = | at project residence |

**Meteorological Conditions**

| | |
|---|---|
| Sonoma County Airport Met D: | 2013-2017 |
| Land Use Classification | rural |
| Wind speed = | variable |
| Wind direction = | variable |

**Residential MEI Concentrations**

| | TAC Concentration (μg/m$^3$) | | |
|---|---|---|---|
| | 2023 | 2024 | 2025 |
| TAC | Max Period Average | Max Period Average | Max Period Average |
| DPM | 0.00000 | 0.00000 | 0.00227 |
| Benzene | 0.00000 | 0.00000 | 0.00472 |
| Ethylbenzene | 0.00000 | 0.00000 | 0.00530 |
| n-Hexane | 0.00000 | 0.00000 | 0.01525 |
| Naphthalene | 0.00000 | 0.00000 | 0.00065 |
| Xylene | 0.00000 | 0.00000 | 0.02606 |
| Toluene | 0.00000 | 0.00000 | 0.02642 |
| TOG Exhaust | 0.00000 | 0.00000 | 0.27116 |
| TOG Evaporative | 0.00000 | 0.00000 | 0.43191 |
| ***PM2.5*** | ***0.000*** | ***0.000*** | ***0.02391*** |

**2023 - Maximum Non-Cancer Health Effects**

| | Maximum Concentration | | Hazard Index | |
|---|---|---|---|---|
| | 1-Hour | Period Ave | | |
| TAC | (μg/m$^3$) | (μg/m$^3$) | Acute | Chronic |
| DPM | - | 0.00000 | - | 0.00E+00 |
| Benzene | - | 0.00000 | - | - |
| Ethylbenzene | - | 0.00000 | - | - |
| n-Hexane | - | 0.00000 | - | - |
| Naphthalene | | 0.00000 | - | - |
| Xylene | - | 0.00000 | - | - |
| Toluene | - | 0.00000 | - | - |
| TOG Exhaust | - | 0.00000 | - | - |
| TOG Evaporative | - | 0.00000 | | |
| **Total** | | | **0.000** | **0.000** |

* Maximum for residential receptors

**2024 - Non-Cancer Health Effects**

| | Maximum Concentration | | Hazard Index | |
|---|---|---|---|---|
| | 1-Hour | Period Ave | | |
| TAC | (μg/m$^3$) | (μg/m$^3$) | Acute | Chronic |
| DPM | - | 0.02666 | - | 5.33E-03 |
| Benzene | - | - | - | - |
| Ethylbenzene | - | - | - | - |
| n-Hexane | - | - | - | - |
| Naphthalene | | | - | - |
| Xylene | - | - | - | - |
| Toluene | - | - | - | - |
| TOG Exhaust | - | - | - | - |
| TOG Evaporative | - | | | |
| **Total** | | | **0.000** | **0.005** |

* Maximum for residential receptors

**2025 - Non-Cancer Health Effects**

| | Maximum Concentration | | Hazard Index | |
|---|---|---|---|---|
| | 1-Hour | Period Ave | | |
| TAC | (μg/m$^3$) | (μg/m$^3$) | Acute | Chronic |
| DPM | - | 0.00227 | - | 4.54E-04 |
| Benzene | 6.37396 | 0.00472 | 2.36E-01 | 1.57E-03 |
| Ethylbenzene | - | 0.00530 | - | 2.65E-06 |
| n-Hexane | - | 0.01525 | - | 2.18E-06 |
| Naphthalene | - | 0.00065 | - | 7.22E-05 |
| Xylene | 16.8839 | 0.02606 | 7.67E-04 | 3.72E-05 |
| Toluene | 8.55855 | 0.02642 | 1.71E-03 | 6.29E-05 |
| TOG Exhaust | 1.3736 | 0.27116 | 4.18E-04 | 9.55E-04 |
| TOG Evaporative | 11.93507 | 0.43191 | 1.57E-02 | 3.60E-03 |
| **Total** | | | **0.255** | **0.007** |

* Maximum for residential receptors

| | | |
|---|---|---|
| **GDF** | **0.239** | **0.002** |
| **Proj Vehicles** | **0.016** | **0.005** |

**Santa Rosa Gas Station - Project Operation**
**Maximum Residential Cancer Risk from Project Operation**
**at On-Site Residential Location**
**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

**Values**

| | Infant/Child | | | Adult |
|---|---|---|---|---|
| Age --> | 3rd Trimester | 0 to 2 | 2 to 16 | 17 - 70 |
| Parameter | | | | |
| 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

**Cancer Potency Factors and Reference Exposure Levels (REL)**

| TAC | CPF $(mg/kg\text{-}day)^{-1}$ | REL ($\mu g/m^3$) Acute (1-hour) | REL ($\mu g/m^3$) Chronic (ann ave) |
|---|---|---|---|
| DPM | 1.10E+00 | - | 5 |
| Benzene | 1.00E-01 | 27 | 3 |
| Ethylbenzene | 8.70E-03 | - | 2,000 |
| n-Hexane | | - | 7,000 |
| Naphthalene | 1.20E-01 | - | 9 |
| Xylene | | 22,000 | 700 |
| Toluene | | 5,000 | 420 |
| TOG Exhaust | 6.28E-03 | 3,283 | 284 |
| TOG Evaporative | 3.70E-04 | 762 | 120 |

**Project Operation Cancer Risk - at Residential MEI Receptor**

Maximum - Exposure Information — Annual Conc (ug/m3)

| Exposure Year Age | Initial Exposure Year | Exposure Duration (years) | Age Sensitivity Factor | DPM | Benzene | Ethyl-benzene | n-Hexane | Naph-thalene | Xylene | Toluene | TOG Exhaust | TOG Evaporative |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 2025 | 0.25 | 10 | 0.00227 | 0.00472 | 0.00530 | 0.01525 | 0.00065 | 0.02606 | 0.02642 | 0.27116 | 0.43191 |
| 0 - 1 | 2025 | 1 | 10 | 0.00227 | 0.00472 | 0.00530 | 0.015250 | 0.00065 | 0.02606 | 0.026420 | 0.27116 | 0.43191 |
| 1 < 2 | 2025 | 1 | 10 | 0.00227 | 0.00472 | 0.00530 | 0.015250 | 0.00065 | 0.02606 | 0.026420 | 0.27116 | 0.43191 |
| 2 < 16 | 2025 | 14 | 3 | 0.00227 | 0.00472 | 0.00530 | 0.015250 | 0.00065 | 0.02606 | 0.026420 | 0.27116 | 0.43191 |
| 16 - 70 | 2025 | 14 | 1 | 0.00227 | 0.00472 | 0.00530 | 0.015250 | 0.00065 | 0.02606 | 0.026420 | 0.27116 | 0.43191 |
| **Total Increased Cancer Risk** | | | | | | | | | | | | |

Cancer Risk (per million)

| Exposure Year Age | DPM | Benzene | Ethyl-benzene | n-Hexane | Naph-thalene | Xylene | Toluene | TOG Exhaust | TOG Evaporative | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0.0309 | 0.0058 | 0.0006 | 0.0000 | 0.0010 | 0.0000 | 0.0000 | 0.0211 | 0.0020 | 0.06 |
| 0 - 1 | 0.3728 | 0.0705 | 0.00688 | 0.0000 | 0.0116 | 0.0000 | 0.0000 | 0.2543 | 0.0239 | 0.74 |
| 1 < 2 | 0.3728 | 0.0705 | 0.00688 | 0.0000 | 0.0116 | 0.0000 | 0.0000 | 0.2543 | 0.0239 | 0.74 |
| 2 < 16 | 0.8218 | 0.1553 | 0.01517 | 0.0000 | 0.0257 | 0.0000 | 0.0000 | 0.5605 | 0.0527 | 1.63 |
| 16 - 70 | 0.0912 | 0.0172 | 0.00168 | 0.0000 | 0.0029 | 0.0000 | 0.0000 | 0.0622 | 0.0058 | 0.18 |
| **Total Increased Cancer Risk** | **1.69** | **0.32** | **0.03** | **0.00** | **0.05** | **0.00** | **0.00** | **1.15** | **0.11** | **3.354** |

* Third trimester of pregnancy

# Attachment 4: Cumulative Health Risk Modeling Information and Calculations

# Cumulative Roadway Emissions

**Santa Rosa GDF**

**Wright Road - South**

**DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions**

**Year = 2025**

| 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_SEG2 | Wright Rd - South | N-S | 4 | 352 | 0.22 | 20.6 | 67.7 | 3.4 | 30 | 32,460 |
| | | | | | | | | | | |
| | | | | | | | | | | |

**Emission Factors - DPM**

| | | | | |
|---|---|---|---|---|
| **Speed Category** | 1 | 2 | 3 | 4 |
| **Travel Speed (mph)** | 30 | | | |
| **Emissions per Vehicle (g/VMT)** | 0.00055 | | | |

Emisson Factors from CT-EMFAC2017

**2025 Hourly Traffic Volumes and DPM Emissions - DPM_SEG2**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4.28% | 1390 | 4.66E-05 | 9 | 6.60% | 2142 | 7.18E-05 | 17 | 5.61% | 1822 | 6.10E-05 |
| 2 | 3.46% | 1123 | 3.76E-05 | 10 | 8.08% | 2624 | 8.79E-05 | 18 | 3.80% | 1233 | 4.13E-05 |
| 3 | 3.62% | 1176 | 3.94E-05 | 11 | 6.44% | 2089 | 7.00E-05 | 19 | 2.48% | 805 | 2.70E-05 |
| 4 | 1.98% | 642 | 2.15E-05 | 12 | 7.42% | 2410 | 8.07E-05 | 20 | 1.00% | 324 | 1.09E-05 |
| 5 | 1.65% | 535 | 1.79E-05 | 13 | 6.27% | 2035 | 6.82E-05 | 21 | 3.14% | 1019 | 3.42E-05 |
| 6 | 2.31% | 749 | 2.51E-05 | 14 | 6.11% | 1982 | 6.64E-05 | 22 | 4.29% | 1394 | 4.67E-05 |
| 7 | 4.79% | 1554 | 5.21E-05 | 15 | 5.12% | 1661 | 5.57E-05 | 23 | 3.13% | 1016 | 3.40E-05 |
| 8 | 3.63% | 1180 | 3.95E-05 | 16 | 4.13% | 1340 | 4.49E-05 | 24 | 0.66% | 214 | 7.17E-06 |
| | | | | | | | | Total | | 32,460 | |

**Santa Rosa GDF**
**Wright Road - South**
**PM2.5 Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions**
**Year = 2025**

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| PM25_SEG2 | Wright Rd - South | N-S | 4 | 352 | 0.22 | 20.6 | 68 | 1.3 | 30 | 32,460 |
| | | | | | | | | | | |
| | | | | | | | | | | |

**Emission Factors - PM2.5**

| | | | | |
|---|---|---|---|---|
| **Speed Category** | 1 | 2 | 3 | 4 |
| **Travel Speed (mph)** | 30 | | | |
| **Emissions per Vehicle (g/VMT)** | 0.001874 | | | |

Emisson Factors from CT-EMFAC2017

**2025 Hourly Traffic Volumes and PM2.5 Emissions - PM25_SEG2**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.17% | 381 | 4.34E-05 | 9 | 7.18% | 2332 | 2.66E-04 | 17 | 7.48% | 2427 | 2.77E-04 |
| 2 | 0.46% | 149 | 1.70E-05 | 10 | 4.48% | 1455 | 1.66E-04 | 18 | 8.16% | 2649 | 3.02E-04 |
| 3 | 0.52% | 170 | 1.93E-05 | 11 | 4.72% | 1531 | 1.74E-04 | 19 | 5.64% | 1831 | 2.09E-04 |
| 4 | 0.24% | 79 | 8.96E-06 | 12 | 5.92% | 1922 | 2.19E-04 | 20 | 4.23% | 1374 | 1.57E-04 |
| 5 | 0.50% | 163 | 1.86E-05 | 13 | 6.13% | 1989 | 2.27E-04 | 21 | 3.21% | 1041 | 1.19E-04 |
| 6 | 0.92% | 298 | 3.40E-05 | 14 | 6.05% | 1964 | 2.24E-04 | 22 | 3.26% | 1057 | 1.20E-04 |
| 7 | 3.70% | 1200 | 1.37E-04 | 15 | 6.98% | 2266 | 2.58E-04 | 23 | 2.46% | 799 | 9.10E-05 |
| 8 | 7.62% | 2473 | 2.82E-04 | 16 | 7.12% | 2311 | 2.63E-04 | 24 | 1.85% | 600 | 6.84E-05 |
| | | | | | | | | Total | | 32,460 | |

**Santa Rosa GDF**
**Wright Road - South**
**TOG Exhaust Modeling - Roadway Links, Traffic Volumes, and TOG Exhaust Emissions**
**Year = 2025**

| 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_SEG2 | Wright Rd - South | N-S | 4 | 352 | 0.22 | 20.6 | 68 | 1.3 | 30 | 32,460 |
| | | | | | | | | | | |
| | | | | | | | | | | |

**Emission Factors - TOG Exhaust**

| | | | | |
|---|---|---|---|---|
| **Speed Category** | 1 | 2 | 3 | 4 |
| **Travel Speed (mph)** | 30 | | | |
| **All Vehicles TOG Emissions per Vehicle (g/VMT)** | 0.03742 | | | |

Emisson Factors from CT-EMFAC2017

**2025 Hourly Traffic Volumes and TOG Exhaust Emissions - TEXH_SEG2**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.17% | 381 | 8.66E-04 | 9 | 7.18% | 2332 | 5.31E-03 | 17 | 7.48% | 2427 | 5.52E-03 |
| 2 | 0.46% | 149 | 3.39E-04 | 10 | 4.48% | 1455 | 3.31E-03 | 18 | 8.16% | 2649 | 6.03E-03 |
| 3 | 0.52% | 170 | 3.86E-04 | 11 | 4.72% | 1531 | 3.48E-03 | 19 | 5.64% | 1831 | 4.17E-03 |
| 4 | 0.24% | 79 | 1.79E-04 | 12 | 5.92% | 1922 | 4.37E-03 | 20 | 4.23% | 1374 | 3.13E-03 |
| 5 | 0.50% | 163 | 3.72E-04 | 13 | 6.13% | 1989 | 4.52E-03 | 21 | 3.21% | 1041 | 2.37E-03 |
| 6 | 0.92% | 298 | 6.78E-04 | 14 | 6.05% | 1964 | 4.47E-03 | 22 | 3.26% | 1057 | 2.41E-03 |
| 7 | 3.70% | 1200 | 2.73E-03 | 15 | 6.98% | 2266 | 5.16E-03 | 23 | 2.46% | 799 | 1.82E-03 |
| 8 | 7.62% | 2473 | 5.63E-03 | 16 | 7.12% | 2311 | 5.26E-03 | 24 | 1.85% | 600 | 1.37E-03 |
| | | | | | | | | Total | | 32,460 | |

**Santa Rosa GDF**

**Wright Road - South**

**TOG Evaporative Emissions Modeling - Roadway Links, Traffic Volumes, and TOG Evaporative Emissions**

**Year = 2025**

| 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_SEG2 | Wright Rd - South | N-S | 4 | 352 | 0.22 | 20.6 | 68 | 1.3 | 30 | 32,460 |
| | | | | | | | | | | |
| | | | | | | | | | | |

**Emission Factors - PM2.5 - Evaporative TOG**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 30 | | | |
| Emissions per Vehicle per Hour (g/hour) | 1.55927 | | | |
| Emissions per Vehicle per Mile (g/VMT) | 0.05198 | | | |

Emisson Factors from CT-EMFAC2017

**2025 Hourly Traffic Volumes and TOG Evaporative Emissions - TEVAP_SEG2**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.17% | 381 | 1.20E-03 | 9 | 7.18% | 2332 | 7.37E-03 | 17 | 7.48% | 2427 | 7.67E-03 |
| 2 | 0.46% | 149 | 4.71E-04 | 10 | 4.48% | 1455 | 4.60E-03 | 18 | 8.16% | 2649 | 8.37E-03 |
| 3 | 0.52% | 170 | 5.36E-04 | 11 | 4.72% | 1531 | 4.84E-03 | 19 | 5.64% | 1831 | 5.79E-03 |
| 4 | 0.24% | 79 | 2.48E-04 | 12 | 5.92% | 1922 | 6.08E-03 | 20 | 4.23% | 1374 | 4.34E-03 |
| 5 | 0.50% | 163 | 5.17E-04 | 13 | 6.13% | 1989 | 6.28E-03 | 21 | 3.21% | 1041 | 3.29E-03 |
| 6 | 0.92% | 298 | 9.42E-04 | 14 | 6.05% | 1964 | 6.21E-03 | 22 | 3.26% | 1057 | 3.34E-03 |
| 7 | 3.70% | 1200 | 3.79E-03 | 15 | 6.98% | 2266 | 7.16E-03 | 23 | 2.46% | 799 | 2.52E-03 |
| 8 | 7.62% | 2473 | 7.81E-03 | 16 | 7.12% | 2311 | 7.30E-03 | 24 | 1.85% | 600 | 1.90E-03 |
| | | | | | | | | Total | | 32,460 | |

**Santa Rosa GDF**
**Wright Road - South**
**Fugitive Road PM2.5 Modeling - Roadway Links, Traffic Volumes, and Fugitive Road PM2.5 Emissions**
**Year = 2025**

| 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_SEG2 | Wright Rd - South | N-S | 4 | 352 | 0.22 | 20.6 | 68 | 1.3 | 30 | 32,460 |
| | | | | | | | | | | |
| | | | | | | | | | | |

**Emission Factors - Fugitive PM2.5**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 30 | | | |
| Tire Wear - Emissions per Vehicle (g/VMT) | 0.00209 | | | |
| Brake Wear - Emissions per Vehicle (g/VMT) | 0.01740 | | | |
| Road Dust - Emissions per Vehicle (g/VMT) | 0.01500 | | | |
| Total Fugitive PM2.5 - Emissions per Vehicle (g/VMT) | 0.03449 | | | |

Emisson Factors from CT-EMFAC2017

**2025 Hourly Traffic Volumes and Fugitive PM2.5 Emissions - FUG_SEG2**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.17% | 381 | 7.99E-04 | 9 | 7.18% | 2332 | 4.89E-03 | 17 | 7.48% | 2427 | 5.09E-03 |
| 2 | 0.46% | 149 | 3.12E-04 | 10 | 4.48% | 1455 | 3.05E-03 | 18 | 8.16% | 2649 | 5.55E-03 |
| 3 | 0.52% | 170 | 3.56E-04 | 11 | 4.72% | 1531 | 3.21E-03 | 19 | 5.64% | 1831 | 3.84E-03 |
| 4 | 0.24% | 79 | 1.65E-04 | 12 | 5.92% | 1922 | 4.03E-03 | 20 | 4.23% | 1374 | 2.88E-03 |
| 5 | 0.50% | 163 | 3.43E-04 | 13 | 6.13% | 1989 | 4.17E-03 | 21 | 3.21% | 1041 | 2.18E-03 |
| 6 | 0.92% | 298 | 6.25E-04 | 14 | 6.05% | 1964 | 4.12E-03 | 22 | 3.26% | 1057 | 2.22E-03 |
| 7 | 3.70% | 1200 | 2.52E-03 | 15 | 6.98% | 2266 | 4.75E-03 | 23 | 2.46% | 799 | 1.68E-03 |
| 8 | 7.62% | 2473 | 5.19E-03 | 16 | 7.12% | 2311 | 4.85E-03 | 24 | 1.85% | 600 | 1.26E-03 |
| | | | | | | | | Total | | 32,460 | |

**Santa Rosa GDF**

**Sebastopol Road**

**DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions**

**Year = 2025**

| 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_SEG3 | Sebastopol Rd - East | E-W | 4 | 399 | 0.25 | 20.6 | 67.7 | 3.4 | 30 | 19,960 |
| | | | | | | | | | | |
| | | | | | | | | | | |

**Emission Factors - DPM**

| | | | | |
|---|---|---|---|---|
| **Speed Category** | 1 | 2 | 3 | 4 |
| **Travel Speed (mph)** | 30 | | | |
| **Emissions per Vehicle (g/VMT)** | 0.00055 | | | |

Emisson Factors from CT-EMFAC2017

**2025 Hourly Traffic Volumes and DPM Emissions - DPM_SEG3**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4.28% | 855 | 3.25E-05 | 9 | 6.60% | 1317 | 5.00E-05 | 17 | 5.61% | 1120 | 4.25E-05 |
| 2 | 3.46% | 691 | 2.62E-05 | 10 | 8.08% | 1613 | 6.13E-05 | 18 | 3.80% | 758 | 2.88E-05 |
| 3 | 3.62% | 723 | 2.75E-05 | 11 | 6.44% | 1284 | 4.88E-05 | 19 | 2.48% | 495 | 1.88E-05 |
| 4 | 1.98% | 395 | 1.50E-05 | 12 | 7.42% | 1482 | 5.63E-05 | 20 | 1.00% | 199 | 7.57E-06 |
| 5 | 1.65% | 329 | 1.25E-05 | 13 | 6.27% | 1252 | 4.75E-05 | 21 | 3.14% | 627 | 2.38E-05 |
| 6 | 2.31% | 460 | 1.75E-05 | 14 | 6.11% | 1219 | 4.63E-05 | 22 | 4.29% | 857 | 3.25E-05 |
| 7 | 4.79% | 956 | 3.63E-05 | 15 | 5.12% | 1021 | 3.88E-05 | 23 | 3.13% | 625 | 2.37E-05 |
| 8 | 3.63% | 725 | 2.76E-05 | 16 | 4.13% | 824 | 3.13E-05 | 24 | 0.66% | 132 | 5.00E-06 |
| | | | | | | | | Total | | 19,960 | |

**Santa Rosa GDF**
**Sebastopol Road**
**PM2.5 Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions**
**Year = 2025**

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| PM25_SEG3 | Sebastopol Rd - East | E-W | 4 | 399 | 0.25 | 20.6 | 68 | 1.3 | 30 | 19,960 |
| | | | | | | | | | | |
| | | | | | | | | | | |

**Emission Factors - PM2.5**

| | | | | |
|---|---|---|---|---|
| **Speed Category** | 1 | 2 | 3 | 4 |
| **Travel Speed (mph)** | 30 | | | |
| **Emissions per Vehicle (g/VMT)** | 0.001874 | | | |

Emisson Factors from CT-EMFAC2017

**2025 Hourly Traffic Volumes and PM2.5 Emissions - PM25_SEG3**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.17% | 234 | 3.02E-05 | 9 | 7.18% | 1434 | 1.85E-04 | 17 | 7.48% | 1493 | 1.93E-04 |
| 2 | 0.46% | 92 | 1.18E-05 | 10 | 4.48% | 894 | 1.16E-04 | 18 | 8.16% | 1629 | 2.10E-04 |
| 3 | 0.52% | 104 | 1.35E-05 | 11 | 4.72% | 942 | 1.22E-04 | 19 | 5.64% | 1126 | 1.45E-04 |
| 4 | 0.24% | 48 | 6.25E-06 | 12 | 5.92% | 1182 | 1.53E-04 | 20 | 4.23% | 845 | 1.09E-04 |
| 5 | 0.50% | 101 | 1.30E-05 | 13 | 6.13% | 1223 | 1.58E-04 | 21 | 3.21% | 640 | 8.27E-05 |
| 6 | 0.92% | 183 | 2.37E-05 | 14 | 6.05% | 1207 | 1.56E-04 | 22 | 3.26% | 650 | 8.40E-05 |
| 7 | 3.70% | 738 | 9.53E-05 | 15 | 6.98% | 1393 | 1.80E-04 | 23 | 2.46% | 491 | 6.34E-05 |
| 8 | 7.62% | 1521 | 1.96E-04 | 16 | 7.12% | 1421 | 1.84E-04 | 24 | 1.85% | 369 | 4.77E-05 |
| | | | | | | | | Total | | 19,960 | |

**Santa Rosa GDF**

**Sebastopol Road**

**TOG Exhaust Modeling - Roadway Links, Traffic Volumes, and TOG Exhaust Emissions**

**Year = 2025**

| 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_SEG3 | Sebastopol Rd - East | E-W | 4 | 399 | 0.25 | 20.6 | 68 | 1.3 | 30 | 19,960 |
| | | | | | | | | | | |
| | | | | | | | | | | |

**Emission Factors - TOG Exhaust**

| | | | | |
|---|---|---|---|---|
| **Speed Category** | 1 | 2 | 3 | 4 |
| **Travel Speed (mph)** | 30 | | | |
| **All Vehicles TOG Emissions per Vehicle (g/VMT)** | 0.03742 | | | |

Emisson Factors from CT-EMFAC2017

**2025 Hourly Traffic Volumes and TOG Exhaust Emissions - TEXH_SEG3**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.17% | 234 | 6.04E-04 | 9 | 7.18% | 1434 | 3.70E-03 | 17 | 7.48% | 1493 | 3.85E-03 |
| 2 | 0.46% | 92 | 2.36E-04 | 10 | 4.48% | 894 | 2.31E-03 | 18 | 8.16% | 1629 | 4.20E-03 |
| 3 | 0.52% | 104 | 2.69E-04 | 11 | 4.72% | 942 | 2.43E-03 | 19 | 5.64% | 1126 | 2.90E-03 |
| 4 | 0.24% | 48 | 1.25E-04 | 12 | 5.92% | 1182 | 3.05E-03 | 20 | 4.23% | 845 | 2.18E-03 |
| 5 | 0.50% | 101 | 2.59E-04 | 13 | 6.13% | 1223 | 3.15E-03 | 21 | 3.21% | 640 | 1.65E-03 |
| 6 | 0.92% | 183 | 4.73E-04 | 14 | 6.05% | 1207 | 3.11E-03 | 22 | 3.26% | 650 | 1.68E-03 |
| 7 | 3.70% | 738 | 1.90E-03 | 15 | 6.98% | 1393 | 3.59E-03 | 23 | 2.46% | 491 | 1.27E-03 |
| 8 | 7.62% | 1521 | 3.92E-03 | 16 | 7.12% | 1421 | 3.67E-03 | 24 | 1.85% | 369 | 9.52E-04 |
| | | | | | | | | Total | | 19,960 | |

**Santa Rosa GDF**
**Sebastopol Road**
**TOG Evaporative Emissions Modeling - Roadway Links, Traffic Volumes, and TOG Evaporative Emissions**
**Year = 2025**

| 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_SEG3 | Sebastopol Rd - East | E-W | 4 | 399 | 0.25 | 20.6 | 68 | 1.3 | 30 | 19,960 |
| | | | | | | | | | | |
| | | | | | | | | | | |

**Emission Factors - PM2.5 - Evaporative TOG**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 30 | | | |
| Emissions per Vehicle per Hour (g/hour) | 1.55927 | | | |
| Emissions per Vehicle per Mile (g/VMT) | 0.05198 | | | |

Emisson Factors from CT-EMFAC2017

**2025 Hourly Traffic Volumes and TOG Evaporative Emissions - TEVAP_SEG3**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.17% | 234 | 8.39E-04 | 9 | 7.18% | 1434 | 5.14E-03 | 17 | 7.48% | 1493 | 5.35E-03 |
| 2 | 0.46% | 92 | 3.28E-04 | 10 | 4.48% | 894 | 3.20E-03 | 18 | 8.16% | 1629 | 5.83E-03 |
| 3 | 0.52% | 104 | 3.74E-04 | 11 | 4.72% | 942 | 3.37E-03 | 19 | 5.64% | 1126 | 4.03E-03 |
| 4 | 0.24% | 48 | 1.73E-04 | 12 | 5.92% | 1182 | 4.23E-03 | 20 | 4.23% | 845 | 3.03E-03 |
| 5 | 0.50% | 101 | 3.60E-04 | 13 | 6.13% | 1223 | 4.38E-03 | 21 | 3.21% | 640 | 2.29E-03 |
| 6 | 0.92% | 183 | 6.56E-04 | 14 | 6.05% | 1207 | 4.33E-03 | 22 | 3.26% | 650 | 2.33E-03 |
| 7 | 3.70% | 738 | 2.64E-03 | 15 | 6.98% | 1393 | 4.99E-03 | 23 | 2.46% | 491 | 1.76E-03 |
| 8 | 7.62% | 1521 | 5.45E-03 | 16 | 7.12% | 1421 | 5.09E-03 | 24 | 1.85% | 369 | 1.32E-03 |
| | | | | | | | | Total | | 19,960 | |

**Santa Rosa GDF**

**Sebastopol Road**

**Fugitive Road PM2.5 Modeling - Roadway Links, Traffic Volumes, and Fugitive Road PM2.5 Emissions**

**Year = 2025**

| 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_SEG3 | Sebastopol Rd - East | E-W | 4 | 399 | 0.25 | 20.6 | 68 | 1.3 | 30 | 19,960 |
| | | | | | | | | | | |
| | | | | | | | | | | |

**Emission Factors - Fugitive PM2.5**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| **Travel Speed (mph)** | 30 | | | |
| **Tire Wear - Emissions per Vehicle (g/VMT)** | 0.00209 | | | |
| **Brake Wear - Emissions per Vehicle (g/VMT)** | 0.01740 | | | |
| **Road Dust - Emissions per Vehicle (g/VMT)** | 0.01500 | | | |
| **Total Fugitive PM2.5 - Emissions per Vehicle (g/VMT)** | 0.03449 | | | |

Emisson Factors from CT-EMFAC2017

**2025 Hourly Traffic Volumes and Fugitive PM2.5 Emissions - FUG_SEG3**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.17% | 234 | 5.57E-04 | 9 | 7.18% | 1434 | 3.41E-03 | 17 | 7.48% | 1493 | 3.55E-03 |
| 2 | 0.46% | 92 | 2.18E-04 | 10 | 4.48% | 894 | 2.13E-03 | 18 | 8.16% | 1629 | 3.87E-03 |
| 3 | 0.52% | 104 | 2.48E-04 | 11 | 4.72% | 942 | 2.24E-03 | 19 | 5.64% | 1126 | 2.68E-03 |
| 4 | 0.24% | 48 | 1.15E-04 | 12 | 5.92% | 1182 | 2.81E-03 | 20 | 4.23% | 845 | 2.01E-03 |
| 5 | 0.50% | 101 | 2.39E-04 | 13 | 6.13% | 1223 | 2.91E-03 | 21 | 3.21% | 640 | 1.52E-03 |
| 6 | 0.92% | 183 | 4.36E-04 | 14 | 6.05% | 1207 | 2.87E-03 | 22 | 3.26% | 650 | 1.55E-03 |
| 7 | 3.70% | 738 | 1.75E-03 | 15 | 6.98% | 1393 | 3.31E-03 | 23 | 2.46% | 491 | 1.17E-03 |
| 8 | 7.62% | 1521 | 3.61E-03 | 16 | 7.12% | 1421 | 3.38E-03 | 24 | 1.85% | 369 | 8.77E-04 |
| | | | | | | | | Total | | 19,960 | |

**Santa Rosa GDF**

**Fulton Road**

**DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions**

**Year = 2025**

| 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_SEG4 | Fulton Rd | N-S | 4 | 352 | 0.22 | 20.6 | 67.7 | 3.4 | 30 | 44,360 |
| | | | | | | | | | | |
| | | | | | | | | | | |

**Emission Factors - DPM**

| | | | | |
|---|---|---|---|---|
| **Speed Category** | 1 | 2 | 3 | 4 |
| **Travel Speed (mph)** | 40 | | | |
| **Emissions per Vehicle (g/VMT)** | 0.00053 | | | |

Emisson Factors from CT-EMFAC2017

**2025 Hourly Traffic Volumes and DPM Emissions - DPM_SEG4**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4.28% | 1900 | 6.09E-05 | 9 | 6.60% | 2928 | 9.38E-05 | 17 | 5.61% | 2489 | 7.98E-05 |
| 2 | 3.46% | 1535 | 4.92E-05 | 10 | 8.08% | 3586 | 1.15E-04 | 18 | 3.80% | 1685 | 5.40E-05 |
| 3 | 3.62% | 1608 | 5.15E-05 | 11 | 6.44% | 2855 | 9.15E-05 | 19 | 2.48% | 1101 | 3.53E-05 |
| 4 | 1.98% | 877 | 2.81E-05 | 12 | 7.42% | 3293 | 1.06E-04 | 20 | 1.00% | 443 | 1.42E-05 |
| 5 | 1.65% | 731 | 2.34E-05 | 13 | 6.27% | 2782 | 8.92E-05 | 21 | 3.14% | 1393 | 4.46E-05 |
| 6 | 2.31% | 1023 | 3.28E-05 | 14 | 6.11% | 2709 | 8.68E-05 | 22 | 4.29% | 1905 | 6.10E-05 |
| 7 | 4.79% | 2124 | 6.81E-05 | 15 | 5.12% | 2270 | 7.28E-05 | 23 | 3.13% | 1389 | 4.45E-05 |
| 8 | 3.63% | 1612 | 5.17E-05 | 16 | 4.13% | 1832 | 5.87E-05 | 24 | 0.66% | 292 | 9.37E-06 |
| | | | | | | | | Total | | 44,360 | |

**Santa Rosa GDF**
**Fulton Road**
**PM2.5 Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions**
**Year = 2025**

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| PM25_SEG4 | Fulton Rd | N-S | 4 | 352 | 0.22 | 20.6 | 68 | 1.3 | 30 | 44,360 |
| | | | | | | | | | | |
| | | | | | | | | | | |

**Emission Factors - PM2.5**

| | | | | |
|---|---|---|---|---|
| **Speed Category** | 1 | 2 | 3 | 4 |
| **Travel Speed (mph)** | 40 | | | |
| **Emissions per Vehicle (g/VMT)** | 0.001469 | | | |

Emisson Factors from CT-EMFAC2017

**2025 Hourly Traffic Volumes and PM2.5 Emissions - PM25_SEG4**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.17% | 520 | 4.65E-05 | 9 | 7.18% | 3187 | 2.85E-04 | 17 | 7.48% | 3317 | 2.96E-04 |
| 2 | 0.46% | 204 | 1.82E-05 | 10 | 4.48% | 1988 | 1.78E-04 | 18 | 8.16% | 3620 | 3.23E-04 |
| 3 | 0.52% | 232 | 2.07E-05 | 11 | 4.72% | 2093 | 1.87E-04 | 19 | 5.64% | 2503 | 2.24E-04 |
| 4 | 0.24% | 107 | 9.60E-06 | 12 | 5.92% | 2627 | 2.35E-04 | 20 | 4.23% | 1878 | 1.68E-04 |
| 5 | 0.50% | 223 | 2.00E-05 | 13 | 6.13% | 2718 | 2.43E-04 | 21 | 3.21% | 1422 | 1.27E-04 |
| 6 | 0.92% | 407 | 3.64E-05 | 14 | 6.05% | 2684 | 2.40E-04 | 22 | 3.26% | 1445 | 1.29E-04 |
| 7 | 3.70% | 1640 | 1.47E-04 | 15 | 6.98% | 3096 | 2.77E-04 | 23 | 2.46% | 1092 | 9.75E-05 |
| 8 | 7.62% | 3379 | 3.02E-04 | 16 | 7.12% | 3159 | 2.82E-04 | 24 | 1.85% | 820 | 7.33E-05 |
| | | | | | | | | Total | | 44,360 | |

**Santa Rosa GDF**
**Fulton Road**
**TOG Exhaust Modeling - Roadway Links, Traffic Volumes, and TOG Exhaust Emissions**
**Year = 2025**

| 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_SEG4 | Fulton Rd | N-S | 4 | 352 | 0.22 | 20.6 | 68 | 1.3 | 30 | 44,360 |
| | | | | | | | | | | |
| | | | | | | | | | | |

**Emission Factors - TOG Exhaust**

| | | | | |
|---|---|---|---|---|
| **Speed Category** | 1 | 2 | 3 | 4 |
| **Travel Speed (mph)** | 40 | | | |
| **All Vehicles TOG Emissions per Vehicle (g/VMT)** | 0.02780 | | | |

Emisson Factors from CT-EMFAC2017

**2025 Hourly Traffic Volumes and TOG Exhaust Emissions - TEXH_SEG4**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.17% | 520 | 8.80E-04 | 9 | 7.18% | 3187 | 5.39E-03 | 17 | 7.48% | 3317 | 5.61E-03 |
| 2 | 0.46% | 204 | 3.44E-04 | 10 | 4.48% | 1988 | 3.36E-03 | 18 | 8.16% | 3620 | 6.12E-03 |
| 3 | 0.52% | 232 | 3.92E-04 | 11 | 4.72% | 2093 | 3.54E-03 | 19 | 5.64% | 2503 | 4.23E-03 |
| 4 | 0.24% | 107 | 1.82E-04 | 12 | 5.92% | 2627 | 4.44E-03 | 20 | 4.23% | 1878 | 3.17E-03 |
| 5 | 0.50% | 223 | 3.78E-04 | 13 | 6.13% | 2718 | 4.59E-03 | 21 | 3.21% | 1422 | 2.40E-03 |
| 6 | 0.92% | 407 | 6.88E-04 | 14 | 6.05% | 2684 | 4.54E-03 | 22 | 3.26% | 1445 | 2.44E-03 |
| 7 | 3.70% | 1640 | 2.77E-03 | 15 | 6.98% | 3096 | 5.23E-03 | 23 | 2.46% | 1092 | 1.85E-03 |
| 8 | 7.62% | 3379 | 5.71E-03 | 16 | 7.12% | 3159 | 5.34E-03 | 24 | 1.85% | 820 | 1.39E-03 |
| | | | | | | | | Total | | 44,360 | |

**Santa Rosa GDF**
**Fulton Road**
**TOG Evaporative Emissions Modeling - Roadway Links, Traffic Volumes, and TOG Evaporative Emissions**
**Year = 2025**

| 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_SEG4 | Fulton Rd | N-S | 4 | 352 | 0.22 | 20.6 | 68 | 1.3 | 30 | 44,360 |
| | | | | | | | | | | |
| | | | | | | | | | | |

**Emission Factors - PM2.5 - Evaporative TOG**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 40 | | | |
| Emissions per Vehicle per Hour (g/hour) | 1.55927 | | | |
| Emissions per Vehicle per Mile (g/VMT) | 0.03898 | | | |

Emisson Factors from CT-EMFAC2017

**2025 Hourly Traffic Volumes and TOG Evaporative Emissions - TEVAP_SEG4**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.17% | 520 | 1.23E-03 | 9 | 7.18% | 3187 | 7.56E-03 | 17 | 7.48% | 3317 | 7.86E-03 |
| 2 | 0.46% | 204 | 4.83E-04 | 10 | 4.48% | 1988 | 4.71E-03 | 18 | 8.16% | 3620 | 8.58E-03 |
| 3 | 0.52% | 232 | 5.50E-04 | 11 | 4.72% | 2093 | 4.96E-03 | 19 | 5.64% | 2503 | 5.93E-03 |
| 4 | 0.24% | 107 | 2.55E-04 | 12 | 5.92% | 2627 | 6.23E-03 | 20 | 4.23% | 1878 | 4.45E-03 |
| 5 | 0.50% | 223 | 5.30E-04 | 13 | 6.13% | 2718 | 6.44E-03 | 21 | 3.21% | 1422 | 3.37E-03 |
| 6 | 0.92% | 407 | 9.65E-04 | 14 | 6.05% | 2684 | 6.36E-03 | 22 | 3.26% | 1445 | 3.43E-03 |
| 7 | 3.70% | 1640 | 3.89E-03 | 15 | 6.98% | 3096 | 7.34E-03 | 23 | 2.46% | 1092 | 2.59E-03 |
| 8 | 7.62% | 3379 | 8.01E-03 | 16 | 7.12% | 3159 | 7.49E-03 | 24 | 1.85% | 820 | 1.94E-03 |
| | | | | | | | | Total | | 44,360 | |

**Santa Rosa GDF**
**Fulton Road**
**Fugitive Road PM2.5 Modeling - Roadway Links, Traffic Volumes, and Fugitive Road PM2.5 Emissions**
**Year = 2025**

| 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_SEG4 | Fulton Rd | N-S | 4 | 352 | 0.22 | 20.6 | 68 | 1.3 | 30 | 44,360 |
| | | | | | | | | | | |
| | | | | | | | | | | |

**Emission Factors - Fugitive PM2.5**

| Speed Category | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Travel Speed (mph) | 40 | | | |
| Tire Wear - Emissions per Vehicle (g/VMT) | 0.00209 | | | |
| Brake Wear - Emissions per Vehicle (g/VMT) | 0.01740 | | | |
| Road Dust - Emissions per Vehicle (g/VMT) | 0.01500 | | | |
| Total Fugitive PM2.5 - Emissions per Vehicle (g/VMT) | 0.03449 | | | |

Emisson Factors from CT-EMFAC2017

**2025 Hourly Traffic Volumes and Fugitive PM2.5 Emissions - FUG_SEG4**

| Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s | Hour | % Per Hour | VPH | g/s |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.17% | 520 | 1.09E-03 | 9 | 7.18% | 3187 | 6.69E-03 | 17 | 7.48% | 3317 | 6.96E-03 |
| 2 | 0.46% | 204 | 4.27E-04 | 10 | 4.48% | 1988 | 4.17E-03 | 18 | 8.16% | 3620 | 7.59E-03 |
| 3 | 0.52% | 232 | 4.86E-04 | 11 | 4.72% | 2093 | 4.39E-03 | 19 | 5.64% | 2503 | 5.25E-03 |
| 4 | 0.24% | 107 | 2.25E-04 | 12 | 5.92% | 2627 | 5.51E-03 | 20 | 4.23% | 1878 | 3.94E-03 |
| 5 | 0.50% | 223 | 4.69E-04 | 13 | 6.13% | 2718 | 5.70E-03 | 21 | 3.21% | 1422 | 2.98E-03 |
| 6 | 0.92% | 407 | 8.54E-04 | 14 | 6.05% | 2684 | 5.63E-03 | 22 | 3.26% | 1445 | 3.03E-03 |
| 7 | 3.70% | 1640 | 3.44E-03 | 15 | 6.98% | 3096 | 6.50E-03 | 23 | 2.46% | 1092 | 2.29E-03 |
| 8 | 7.62% | 3379 | 7.09E-03 | 16 | 7.12% | 3159 | 6.63E-03 | 24 | 1.85% | 820 | 1.72E-03 |
| | | | | | | | | Total | | 44,360 | |

## Health Risk Calculations

**Santa Rosa GDF - Cumulative Roadway Health Risk Summary**

**Health Impacts at Off-Site MEI Receptor**

| Road | Cancer Risk (per million) | PM2.5 Conc ($\mu g/m^3$) | HI |
|---|---|---|---|
| Wright Road | 5.26 | 0.33 | < 0.01 |
| Sebatopol Road | 4.28 | 0.30 | < 0.01 |
| Fulton Road | 1.50 | 0.09 | < 0.01 |

**Health Impacts at On-Site MEI Receptor**

| Road | Cancer Risk (per million) | PM2.5 Conc ($\mu g/m^3$) | HI |
|---|---|---|---|
| Wright Road | 1.89 | 0.11 | < 0.01 |
| Sebatopol Road | 0.85 | 0.05 | < 0.01 |
| Fulton Road | 3.32 | 0.19 | < 0.01 |

**Santa Rosa GDF - Wright Road Traffic - TACs & PM2.5**
**AERMOD Risk Modeling Parameters and Maximum Concentrations**
**Off-Site Maximum Residential Cancer Risk Receptor - 1.5 m receptor height**

| | |
|---|---|
| **Emissions Year** | 2025 |
| **Receptor Information** | |
| Number of Receptors | 1 |
| Receptor Height = | 1.5 meters above ground level |
| Receptor distances = | receptor at off-site MEI location |
| **Meteorological Conditions** | |
| Sonoma County Airport Met Data | 2013-2017 |
| Land Use Classification | rural |
| Wind speed = | variable |
| Wind direction = | variable |

**MEI Maximum Concentrations**

| Emission Years | Concentration ($\mu g/m^3$) | | |
|---|---|---|---|
| | DPM | Exhaust TOG | Evaporative TOG |
| 2025 | 0.00499 | 0.3365 | 0.4665 |

| Emission Years | PM2.5 Concentrations ($\mu g/m^3$) |
|---|---|
| | Total PM2.5 |
| 2025 | 0.3271 |

**Santa Rosa GDF - Wright Road Traffic Maximum Cancer Risks**
**Off-Site Maximum Residential Cancer Risk Receptor - 1.5 m 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

**Values**

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

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

| | 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 |
| ED = | 0.25 | 2 | 14 | 14 |
| AT = | 70 | 70 | 70 | 70 |
| FAH = | 1.00 | 1.00 | 1.00 | 0.73 |

* 95th percentile breathing rates

**Road Traffic Cancer Risk by Year - Project MEI Receptor Location**

| Exposure Year | Year | Exposure Duration (years) | Age | Maximum - Exposure Information: Age Sensitivity Factor | Annual TAC Conc (ug/m3): DPM | Exhaust TOG | Evaporative TOG | Cancer Risk (per million): DPM | Exhaust TOG | Evaporative TOG | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 2023 | 0.25 | -0.25 - 0* | 10 | 0.0050 | 0.3365 | 0.4665 | 0.068 | 0.026 | 0.002 | 0.10 |
| 1 | 2023 | 1 | 1 | 10 | 0.0050 | 0.3365 | 0.4665 | 0.82 | 0.316 | 0.026 | 1.16 |
| 2 | 2024 | 1 | 2 | 10 | 0.0050 | 0.3365 | 0.4665 | 0.82 | 0.316 | 0.026 | 1.16 |
| 3 | 2025 | 1 | 3 | 3 | 0.0050 | 0.3365 | 0.4665 | 0.13 | 0.050 | 0.004 | 0.18 |
| 4 | 2026 | 1 | 4 | 3 | 0.0050 | 0.3365 | 0.4665 | 0.13 | 0.050 | 0.004 | 0.18 |
| 5 | 2027 | 1 | 5 | 3 | 0.0050 | 0.3365 | 0.4665 | 0.13 | 0.050 | 0.004 | 0.18 |
| 6 | 2028 | 1 | 6 | 3 | 0.0050 | 0.3365 | 0.4665 | 0.13 | 0.050 | 0.004 | 0.18 |
| 7 | 2029 | 1 | 7 | 3 | 0.0050 | 0.3365 | 0.4665 | 0.13 | 0.050 | 0.004 | 0.18 |
| 8 | 2030 | 1 | 8 | 3 | 0.0050 | 0.3365 | 0.4665 | 0.13 | 0.050 | 0.004 | 0.18 |
| 9 | 2031 | 1 | 9 | 3 | 0.0050 | 0.3365 | 0.4665 | 0.13 | 0.050 | 0.004 | 0.18 |
| 10 | 2032 | 1 | 10 | 3 | 0.0050 | 0.3365 | 0.4665 | 0.13 | 0.050 | 0.004 | 0.18 |
| 11 | 2033 | 1 | 11 | 3 | 0.0050 | 0.3365 | 0.4665 | 0.13 | 0.050 | 0.004 | 0.18 |
| 12 | 2034 | 1 | 12 | 3 | 0.0050 | 0.3365 | 0.4665 | 0.13 | 0.050 | 0.004 | 0.18 |
| 13 | 2035 | 1 | 13 | 3 | 0.0050 | 0.3365 | 0.4665 | 0.13 | 0.050 | 0.004 | 0.18 |
| 14 | 2036 | 1 | 14 | 3 | 0.0050 | 0.3365 | 0.4665 | 0.13 | 0.050 | 0.004 | 0.18 |
| 15 | 2037 | 1 | 15 | 3 | 0.0050 | 0.3365 | 0.4665 | 0.13 | 0.050 | 0.004 | 0.18 |
| 16 | 2038 | 1 | 16 | 3 | 0.0050 | 0.3365 | 0.4665 | 0.13 | 0.050 | 0.004 | 0.18 |
| 17 | 2039 | 1 | 17 | 1 | 0.0050 | 0.3365 | 0.4665 | 0.01 | 0.006 | 0.000 | 0.020 |
| 18 | 2040 | 1 | 18 | 1 | 0.0050 | 0.3365 | 0.4665 | 0.01 | 0.006 | 0.000 | 0.020 |
| 19 | 2041 | 1 | 19 | 1 | 0.0050 | 0.3365 | 0.4665 | 0.01 | 0.006 | 0.000 | 0.020 |
| 20 | 2042 | 1 | 20 | 1 | 0.0050 | 0.3365 | 0.4665 | 0.01 | 0.006 | 0.000 | 0.020 |
| 21 | 2043 | 1 | 21 | 1 | 0.0050 | 0.3365 | 0.4665 | 0.01 | 0.006 | 0.000 | 0.020 |
| 22 | 2044 | 1 | 22 | 1 | 0.0050 | 0.3365 | 0.4665 | 0.01 | 0.006 | 0.000 | 0.020 |
| 23 | 2045 | 1 | 23 | 1 | 0.0050 | 0.3365 | 0.4665 | 0.01 | 0.006 | 0.000 | 0.020 |
| 24 | 2046 | 1 | 24 | 1 | 0.0050 | 0.3365 | 0.4665 | 0.01 | 0.006 | 0.000 | 0.020 |
| 25 | 2047 | 1 | 25 | 1 | 0.0050 | 0.3365 | 0.4665 | 0.01 | 0.006 | 0.000 | 0.020 |
| 26 | 2048 | 1 | 26 | 1 | 0.0050 | 0.3365 | 0.4665 | 0.01 | 0.006 | 0.000 | 0.020 |
| 27 | 2049 | 1 | 27 | 1 | 0.0050 | 0.3365 | 0.4665 | 0.01 | 0.006 | 0.000 | 0.020 |
| 28 | 2050 | 1 | 28 | 1 | 0.0050 | 0.3365 | 0.4665 | 0.01 | 0.006 | 0.000 | 0.020 |
| 29 | 2051 | 1 | 29 | 1 | 0.0050 | 0.3365 | 0.4665 | 0.01 | 0.006 | 0.000 | 0.020 |
| 30 | 2052 | 1 | 30 | 1 | 0.0050 | 0.3365 | 0.4665 | 0.01 | 0.006 | 0.000 | 0.020 |
| **Total Increased Cancer Risk** | | | Total | | | | | 3.71 | 1.430 | 0.117 | **5.26** |

* Third trimester of pregnancy

**Santa Rosa GDF - Sebastopol Road Traffic - TACs & PM2.5**
**AERMOD Risk Modeling Parameters and Maximum Concentrations**
**Off-Site Maximum Residential Cancer Risk Receptor - 1.5 m receptor height**

| | |
|---|---|
| **Emissions Year** | 2025 |
| **Receptor Information** | |
| Number of Receptors | 1 |
| Receptor Height = | 1.5 meters above ground level |
| Receptor distances = | receptor at off-site MEI location |
| | |
| **Meteorological Conditions** | |
| Sonoma County Airport Met Data | 2013-2017 |
| Land Use Classification | rural |
| Wind speed = | variable |
| Wind direction = | variable |

**MEI Maximum Concentrations**

| Emission Years | Concentration (μg/m$^3$) | | |
|---|---|---|---|
| | DPM | Exhaust TOG | Evaporative TOG |
| 2025 | 0.00386 | 0.3057 | 0.4256 |

| Emission Years | PM2.5 Concentrations (μg/m$^3$) |
|---|---|
| | Total PM2.5 |
| 2025 | 0.2982 |

**Santa Rosa GDF - Sebastopol Road Traffic Maximum Cancer Risks**
**Off-Site Maximum Residential Cancer Risk Receptor - 1.5 m 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

### Values

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

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

| | 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 |
| ED = | 0.25 | 2 | 14 | 14 |
| AT = | 70 | 70 | 70 | 70 |
| FAH = | 1.00 | 1.00 | 1.00 | 0.73 |

* 95th percentile breathing rates

**Road Traffic Cancer Risk by Year - Maximum Impact Receptor Location**

| | | | | Maximum - Exposure Information | | | | Cancer Risk (per million) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Exposure | | Age | Annual TAC Conc (ug/m3) | | | | | | |
| Exposure | | Duration | | Sensitivity | | Exhaust | Evaporative | | Exhaust | Evaporative | |
| Year | Year | (years) | Age | Factor | DPM | TOG | TOG | DPM | TOG | TOG | Total |
| 0 | 2023 | 0.25 | -0.25 - 0* | 10 | 0.0039 | 0.3057 | 0.4256 | 0.052 | 0.024 | 0.002 | 0.08 |
| 1 | 2023 | 1 | 1 | 10 | 0.0039 | 0.3057 | 0.4256 | 0.63 | 0.287 | 0.024 | 0.94 |
| 2 | 2024 | 1 | 2 | 10 | 0.0039 | 0.3057 | 0.4256 | 0.63 | 0.287 | 0.024 | 0.94 |
| 3 | 2025 | 1 | 3 | 3 | 0.0039 | 0.3057 | 0.4256 | 0.10 | 0.045 | 0.004 | 0.15 |
| 4 | 2026 | 1 | 4 | 3 | 0.0039 | 0.3057 | 0.4256 | 0.10 | 0.045 | 0.004 | 0.15 |
| 5 | 2027 | 1 | 5 | 3 | 0.0039 | 0.3057 | 0.4256 | 0.10 | 0.045 | 0.004 | 0.15 |
| 6 | 2028 | 1 | 6 | 3 | 0.0039 | 0.3057 | 0.4256 | 0.10 | 0.045 | 0.004 | 0.15 |
| 7 | 2029 | 1 | 7 | 3 | 0.0039 | 0.3057 | 0.4256 | 0.10 | 0.045 | 0.004 | 0.15 |
| 8 | 2030 | 1 | 8 | 3 | 0.0039 | 0.3057 | 0.4256 | 0.10 | 0.045 | 0.004 | 0.15 |
| 9 | 2031 | 1 | 9 | 3 | 0.0039 | 0.3057 | 0.4256 | 0.10 | 0.045 | 0.004 | 0.15 |
| 10 | 2032 | 1 | 10 | 3 | 0.0039 | 0.3057 | 0.4256 | 0.10 | 0.045 | 0.004 | 0.15 |
| 11 | 2033 | 1 | 11 | 3 | 0.0039 | 0.3057 | 0.4256 | 0.10 | 0.045 | 0.004 | 0.15 |
| 12 | 2034 | 1 | 12 | 3 | 0.0039 | 0.3057 | 0.4256 | 0.10 | 0.045 | 0.004 | 0.15 |
| 13 | 2035 | 1 | 13 | 3 | 0.0039 | 0.3057 | 0.4256 | 0.10 | 0.045 | 0.004 | 0.15 |
| 14 | 2036 | 1 | 14 | 3 | 0.0039 | 0.3057 | 0.4256 | 0.10 | 0.045 | 0.004 | 0.15 |
| 15 | 2037 | 1 | 15 | 3 | 0.0039 | 0.3057 | 0.4256 | 0.10 | 0.045 | 0.004 | 0.15 |
| 16 | 2038 | 1 | 16 | 3 | 0.0039 | 0.3057 | 0.4256 | 0.10 | 0.045 | 0.004 | 0.15 |
| 17 | 2039 | 1 | 17 | 1 | 0.0039 | 0.3057 | 0.4256 | 0.01 | 0.005 | 0.000 | 0.017 |
| 18 | 2040 | 1 | 18 | 1 | 0.0039 | 0.3057 | 0.4256 | 0.01 | 0.005 | 0.000 | 0.017 |
| 19 | 2041 | 1 | 19 | 1 | 0.0039 | 0.3057 | 0.4256 | 0.01 | 0.005 | 0.000 | 0.017 |
| 20 | 2042 | 1 | 20 | 1 | 0.0039 | 0.3057 | 0.4256 | 0.01 | 0.005 | 0.000 | 0.017 |
| 21 | 2043 | 1 | 21 | 1 | 0.0039 | 0.3057 | 0.4256 | 0.01 | 0.005 | 0.000 | 0.017 |
| 22 | 2044 | 1 | 22 | 1 | 0.0039 | 0.3057 | 0.4256 | 0.01 | 0.005 | 0.000 | 0.017 |
| 23 | 2045 | 1 | 23 | 1 | 0.0039 | 0.3057 | 0.4256 | 0.01 | 0.005 | 0.000 | 0.017 |
| 24 | 2046 | 1 | 24 | 1 | 0.0039 | 0.3057 | 0.4256 | 0.01 | 0.005 | 0.000 | 0.017 |
| 25 | 2047 | 1 | 25 | 1 | 0.0039 | 0.3057 | 0.4256 | 0.01 | 0.005 | 0.000 | 0.017 |
| 26 | 2048 | 1 | 26 | 1 | 0.0039 | 0.3057 | 0.4256 | 0.01 | 0.005 | 0.000 | 0.017 |
| 27 | 2049 | 1 | 27 | 1 | 0.0039 | 0.3057 | 0.4256 | 0.01 | 0.005 | 0.000 | 0.017 |
| 28 | 2050 | 1 | 28 | 1 | 0.0039 | 0.3057 | 0.4256 | 0.01 | 0.005 | 0.000 | 0.017 |
| 29 | 2051 | 1 | 29 | 1 | 0.0039 | 0.3057 | 0.4256 | 0.01 | 0.005 | 0.000 | 0.017 |
| 30 | 2052 | 1 | 30 | 1 | 0.0039 | 0.3057 | 0.4256 | 0.01 | 0.005 | 0.000 | 0.017 |
| **Total Increased Cancer Risk** | | | **Total** | | | | | 2.87 | 1.299 | 0.107 | **4.28** |

* Third trimester of pregnancy

**Santa Rosa GDF - Fulton Road Traffic - TACs & PM2.5**
**AERMOD Risk Modeling Parameters and Maximum Concentrations**
**Off-Site Maximum Residential Cancer Risk Receptor - 1.5 m receptor height**

| | |
|---|---|
| **Emissions Year** | 2025 |
| **Receptor Information** | |
| Number of Receptors | 1 |
| Receptor Height = | 1.5 meters above ground level |
| Receptor distances = | receptor at off-site MEI location |
| | |
| **Meteorological Conditions** | |
| Sonoma County Airport Met Data | 2013-2017 |
| Land Use Classification | rural |
| Wind speed = | variable |
| Wind direction = | variable |

**MEI Maximum Concentrations**

| | Concentration (µg/m$^3$) | | |
|---|---|---|---|
| **Emission Years** | **DPM** | **Exhaust TOG** | **Evaporative TOG** |
| 2025 | 0.00157 | 0.07140 | 0.1002 |

| | PM2.5 Concentrations (µg/m$^3$) |
|---|---|
| **Emission Years** | **Total PM2.5** |
| 2025 | 0.09257 |

**Santa Rosa GDF - Fulton Road Traffic Maximum Cancer Risks**
**Off-Site Maximum Residential Cancer Risk Receptor - 1.5 m 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

**Values**

**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 |

| | 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 |
| ED = | 0.25 | 2 | 14 | 14 |
| AT = | 70 | 70 | 70 | 70 |
| FAH = | 1.00 | 1.00 | 1.00 | 0.73 |

* 95th percentile breathing rates

**Road Traffic Cancer Risk by Year - Project MEI Receptor Location**

| | | | | Maximum - Exposure Information | | | | Cancer Risk (per million) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Exposure | | Age | Annual TAC Conc (ug/m3) | | | | | | |
| Exposure | | Duration | | Sensitivity | | Exhaust | Evaporative | | Exhaust | Evaporative | |
| Year | Year | (years) | Age | Factor | DPM | TOG | TOG | DPM | TOG | TOG | Total |
| 0 | 2023 | 0.25 | -0.25 - 0* | 10 | 0.0016 | 0.0714 | 0.1002 | 0.021 | 0.006 | 0.000 | 0.03 |
| 1 | 2023 | 1 | 1 | 10 | 0.0016 | 0.0714 | 0.1002 | 0.26 | 0.067 | 0.006 | 0.33 |
| 2 | 2024 | 1 | 2 | 10 | 0.0016 | 0.0714 | 0.1002 | 0.26 | 0.067 | 0.006 | 0.33 |
| 3 | 2025 | 1 | 3 | 3 | 0.0016 | 0.0714 | 0.1002 | 0.04 | 0.011 | 0.001 | 0.05 |
| 4 | 2026 | 1 | 4 | 3 | 0.0016 | 0.0714 | 0.1002 | 0.04 | 0.011 | 0.001 | 0.05 |
| 5 | 2027 | 1 | 5 | 3 | 0.0016 | 0.0714 | 0.1002 | 0.04 | 0.011 | 0.001 | 0.05 |
| 6 | 2028 | 1 | 6 | 3 | 0.0016 | 0.0714 | 0.1002 | 0.04 | 0.011 | 0.001 | 0.05 |
| 7 | 2029 | 1 | 7 | 3 | 0.0016 | 0.0714 | 0.1002 | 0.04 | 0.011 | 0.001 | 0.05 |
| 8 | 2030 | 1 | 8 | 3 | 0.0016 | 0.0714 | 0.1002 | 0.04 | 0.011 | 0.001 | 0.05 |
| 9 | 2031 | 1 | 9 | 3 | 0.0016 | 0.0714 | 0.1002 | 0.04 | 0.011 | 0.001 | 0.05 |
| 10 | 2032 | 1 | 10 | 3 | 0.0016 | 0.0714 | 0.1002 | 0.04 | 0.011 | 0.001 | 0.05 |
| 11 | 2033 | 1 | 11 | 3 | 0.0016 | 0.0714 | 0.1002 | 0.04 | 0.011 | 0.001 | 0.05 |
| 12 | 2034 | 1 | 12 | 3 | 0.0016 | 0.0714 | 0.1002 | 0.04 | 0.011 | 0.001 | 0.05 |
| 13 | 2035 | 1 | 13 | 3 | 0.0016 | 0.0714 | 0.1002 | 0.04 | 0.011 | 0.001 | 0.05 |
| 14 | 2036 | 1 | 14 | 3 | 0.0016 | 0.0714 | 0.1002 | 0.04 | 0.011 | 0.001 | 0.05 |
| 15 | 2037 | 1 | 15 | 3 | 0.0016 | 0.0714 | 0.1002 | 0.04 | 0.011 | 0.001 | 0.05 |
| 16 | 2038 | 1 | 16 | 3 | 0.0016 | 0.0714 | 0.1002 | 0.04 | 0.011 | 0.001 | 0.05 |
| 17 | 2039 | 1 | 17 | 1 | 0.0016 | 0.0714 | 0.1002 | 0.00 | 0.001 | 0.000 | 0.006 |
| 18 | 2040 | 1 | 18 | 1 | 0.0016 | 0.0714 | 0.1002 | 0.00 | 0.001 | 0.000 | 0.006 |
| 19 | 2041 | 1 | 19 | 1 | 0.0016 | 0.0714 | 0.1002 | 0.00 | 0.001 | 0.000 | 0.006 |
| 20 | 2042 | 1 | 20 | 1 | 0.0016 | 0.0714 | 0.1002 | 0.00 | 0.001 | 0.000 | 0.006 |
| 21 | 2043 | 1 | 21 | 1 | 0.0016 | 0.0714 | 0.1002 | 0.00 | 0.001 | 0.000 | 0.006 |
| 22 | 2044 | 1 | 22 | 1 | 0.0016 | 0.0714 | 0.1002 | 0.00 | 0.001 | 0.000 | 0.006 |
| 23 | 2045 | 1 | 23 | 1 | 0.0016 | 0.0714 | 0.1002 | 0.00 | 0.001 | 0.000 | 0.006 |
| 24 | 2046 | 1 | 24 | 1 | 0.0016 | 0.0714 | 0.1002 | 0.00 | 0.001 | 0.000 | 0.006 |
| 25 | 2047 | 1 | 25 | 1 | 0.0016 | 0.0714 | 0.1002 | 0.00 | 0.001 | 0.000 | 0.006 |
| 26 | 2048 | 1 | 26 | 1 | 0.0016 | 0.0714 | 0.1002 | 0.00 | 0.001 | 0.000 | 0.006 |
| 27 | 2049 | 1 | 27 | 1 | 0.0016 | 0.0714 | 0.1002 | 0.00 | 0.001 | 0.000 | 0.006 |
| 28 | 2050 | 1 | 28 | 1 | 0.0016 | 0.0714 | 0.1002 | 0.00 | 0.001 | 0.000 | 0.006 |
| 29 | 2051 | 1 | 29 | 1 | 0.0016 | 0.0714 | 0.1002 | 0.00 | 0.001 | 0.000 | 0.006 |
| 30 | 2052 | 1 | 30 | 1 | 0.0016 | 0.0714 | 0.1002 | 0.00 | 0.001 | 0.000 | 0.006 |
| **Total Increased Cancer Risk** | | | Total | | | | | 1.17 | 0.303 | 0.025 | **1.50** |

* Third trimester of pregnancy

**Santa Rosa GDF - Wright Road Traffic Maximum Cancer Risks**
**On-Site Maximum Residential Cancer Risk Receptor - 5.8 m 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

**Values**

**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 |

| | 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 |
| ED = | 0.25 | 2 | 14 | 14 |
| AT = | 70 | 70 | 70 | 70 |
| FAH = | 1.00 | 1.00 | 1.00 | 0.73 |

* 95th percentile breathing rates

**Road Traffic Cancer Risk by Year - Project MEI Receptor Location**

| Exposure Year | Year | Exposure Duration (years) | Age | Maximum - Exposure Information: Age Sensitivity Factor | Annual TAC Conc (ug/m3): DPM | Annual TAC Conc (ug/m3): Exhaust TOG | Annual TAC Conc (ug/m3): Evaporative TOG | Cancer Risk (per million): DPM | Cancer Risk (per million): Exhaust TOG | Cancer Risk (per million): Evaporative TOG | Cancer Risk (per million): Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 2023 | 0.25 | -0.25 - 0* | 10 | 0.0019 | 0.1114 | 0.1545 | 0.025 | 0.009 | 0.001 | 0.03 |
| 1 | 2023 | 1 | 1 | 10 | 0.0019 | 0.1114 | 0.1545 | 0.30 | 0.105 | 0.009 | 0.42 |
| 2 | 2024 | 1 | 2 | 10 | 0.0019 | 0.1114 | 0.1545 | 0.30 | 0.105 | 0.009 | 0.42 |
| 3 | 2025 | 1 | 3 | 3 | 0.0019 | 0.1114 | 0.1545 | 0.05 | 0.016 | 0.001 | 0.07 |
| 4 | 2026 | 1 | 4 | 3 | 0.0019 | 0.1114 | 0.1545 | 0.05 | 0.016 | 0.001 | 0.07 |
| 5 | 2027 | 1 | 5 | 3 | 0.0019 | 0.1114 | 0.1545 | 0.05 | 0.016 | 0.001 | 0.07 |
| 6 | 2028 | 1 | 6 | 3 | 0.0019 | 0.1114 | 0.1545 | 0.05 | 0.016 | 0.001 | 0.07 |
| 7 | 2029 | 1 | 7 | 3 | 0.0019 | 0.1114 | 0.1545 | 0.05 | 0.016 | 0.001 | 0.07 |
| 8 | 2030 | 1 | 8 | 3 | 0.0019 | 0.1114 | 0.1545 | 0.05 | 0.016 | 0.001 | 0.07 |
| 9 | 2031 | 1 | 9 | 3 | 0.0019 | 0.1114 | 0.1545 | 0.05 | 0.016 | 0.001 | 0.07 |
| 10 | 2032 | 1 | 10 | 3 | 0.0019 | 0.1114 | 0.1545 | 0.05 | 0.016 | 0.001 | 0.07 |
| 11 | 2033 | 1 | 11 | 3 | 0.0019 | 0.1114 | 0.1545 | 0.05 | 0.016 | 0.001 | 0.07 |
| 12 | 2034 | 1 | 12 | 3 | 0.0019 | 0.1114 | 0.1545 | 0.05 | 0.016 | 0.001 | 0.07 |
| 13 | 2035 | 1 | 13 | 3 | 0.0019 | 0.1114 | 0.1545 | 0.05 | 0.016 | 0.001 | 0.07 |
| 14 | 2036 | 1 | 14 | 3 | 0.0019 | 0.1114 | 0.1545 | 0.05 | 0.016 | 0.001 | 0.07 |
| 15 | 2037 | 1 | 15 | 3 | 0.0019 | 0.1114 | 0.1545 | 0.05 | 0.016 | 0.001 | 0.07 |
| 16 | 2038 | 1 | 16 | 3 | 0.0019 | 0.1114 | 0.1545 | 0.05 | 0.016 | 0.001 | 0.07 |
| 17 | 2039 | 1 | 17 | 1 | 0.0019 | 0.1114 | 0.1545 | 0.01 | 0.002 | 0.000 | 0.007 |
| 18 | 2040 | 1 | 18 | 1 | 0.0019 | 0.1114 | 0.1545 | 0.01 | 0.002 | 0.000 | 0.007 |
| 19 | 2041 | 1 | 19 | 1 | 0.0019 | 0.1114 | 0.1545 | 0.01 | 0.002 | 0.000 | 0.007 |
| 20 | 2042 | 1 | 20 | 1 | 0.0019 | 0.1114 | 0.1545 | 0.01 | 0.002 | 0.000 | 0.007 |
| 21 | 2043 | 1 | 21 | 1 | 0.0019 | 0.1114 | 0.1545 | 0.01 | 0.002 | 0.000 | 0.007 |
| 22 | 2044 | 1 | 22 | 1 | 0.0019 | 0.1114 | 0.1545 | 0.01 | 0.002 | 0.000 | 0.007 |
| 23 | 2045 | 1 | 23 | 1 | 0.0019 | 0.1114 | 0.1545 | 0.01 | 0.002 | 0.000 | 0.007 |
| 24 | 2046 | 1 | 24 | 1 | 0.0019 | 0.1114 | 0.1545 | 0.01 | 0.002 | 0.000 | 0.007 |
| 25 | 2047 | 1 | 25 | 1 | 0.0019 | 0.1114 | 0.1545 | 0.01 | 0.002 | 0.000 | 0.007 |
| 26 | 2048 | 1 | 26 | 1 | 0.0019 | 0.1114 | 0.1545 | 0.01 | 0.002 | 0.000 | 0.007 |
| 27 | 2049 | 1 | 27 | 1 | 0.0019 | 0.1114 | 0.1545 | 0.01 | 0.002 | 0.000 | 0.007 |
| 28 | 2050 | 1 | 28 | 1 | 0.0019 | 0.1114 | 0.1545 | 0.01 | 0.002 | 0.000 | 0.007 |
| 29 | 2051 | 1 | 29 | 1 | 0.0019 | 0.1114 | 0.1545 | 0.01 | 0.002 | 0.000 | 0.007 |
| 30 | 2052 | 1 | 30 | 1 | 0.0019 | 0.1114 | 0.1545 | 0.01 | 0.002 | 0.000 | 0.007 |
| **Total Increased Cancer Risk** | | | **Total** | | | | | 1.38 | 0.474 | 0.039 | **1.89** |

* Third trimester of pregnancy

**Santa Rosa GDF - Sebastopol Road Traffic - TACs & PM2.5**
**AERMOD Risk Modeling Parameters and Maximum Concentrations**
**On-Site Maximum Residential Cancer Risk Receptor - 5.8 m receptor height**

| | |
|---|---|
| **Emissions Year** | 2025 |
| **Receptor Information** | |
| Number of Receptors | 1 |
| Receptor Height = | 5.8 meters above ground level |
| Receptor distances = | receptor at on-site MEI location |
| | |
| **Meteorological Conditions** | |
| Sonoma County Airport Met Data | 2013-2017 |
| Land Use Classification | rural |
| Wind speed = | variable |
| Wind direction = | variable |

**MEI Maximum Concentrations**

| | Concentration (µg/m$^3$) | | |
|---|---|---|---|
| **Emission Years** | **DPM** | **Exhaust TOG** | **Evaporative TOG** |
| 2025 | 0.00081 | 0.0528 | 0.0736 |

| | PM2.5 Concentrations (µg/m$^3$) |
|---|---|
| **Emission Years** | **Total PM2.5** |
| 2025 | 0.0515 |

**Santa Rosa GDF - Sebastopol Road Traffic Maximum Cancer Risks**
**On-Site Maximum Residential Cancer Risk Receptor - 5.8 m 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

### Values

**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 |

| | 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 |
| ED = | 0.25 | 2 | 14 | 14 |
| AT = | 70 | 70 | 70 | 70 |
| FAH = | 1.00 | 1.00 | 1.00 | 0.73 |

* 95th percentile breathing rates

### Road Traffic Cancer Risk by Year - Maximum Impact Receptor Location

| | | | | Maximum - Exposure Information | | | | Cancer Risk (per million) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Exposure | | Age | Annual TAC Conc (ug/m3) | | | | | | |
| Exposure | | Duration | | Sensitivity | | Exhaust | Evaporative | | Exhaust | Evaporative | |
| Year | Year | (years) | Age | Factor | DPM | TOG | TOG | DPM | TOG | TOG | Total |
| 0 | 2023 | 0.25 | -0.25 - 0* | 10 | 0.0008 | 0.0528 | 0.0736 | 0.011 | 0.004 | 0.000 | 0.02 |
| 1 | 2023 | 1 | 1 | 10 | 0.0008 | 0.0528 | 0.0736 | 0.13 | 0.050 | 0.004 | 0.19 |
| 2 | 2024 | 1 | 2 | 10 | 0.0008 | 0.0528 | 0.0736 | 0.13 | 0.050 | 0.004 | 0.19 |
| 3 | 2025 | 1 | 3 | 3 | 0.0008 | 0.0528 | 0.0736 | 0.02 | 0.008 | 0.001 | 0.03 |
| 4 | 2026 | 1 | 4 | 3 | 0.0008 | 0.0528 | 0.0736 | 0.02 | 0.008 | 0.001 | 0.03 |
| 5 | 2027 | 1 | 5 | 3 | 0.0008 | 0.0528 | 0.0736 | 0.02 | 0.008 | 0.001 | 0.03 |
| 6 | 2028 | 1 | 6 | 3 | 0.0008 | 0.0528 | 0.0736 | 0.02 | 0.008 | 0.001 | 0.03 |
| 7 | 2029 | 1 | 7 | 3 | 0.0008 | 0.0528 | 0.0736 | 0.02 | 0.008 | 0.001 | 0.03 |
| 8 | 2030 | 1 | 8 | 3 | 0.0008 | 0.0528 | 0.0736 | 0.02 | 0.008 | 0.001 | 0.03 |
| 9 | 2031 | 1 | 9 | 3 | 0.0008 | 0.0528 | 0.0736 | 0.02 | 0.008 | 0.001 | 0.03 |
| 10 | 2032 | 1 | 10 | 3 | 0.0008 | 0.0528 | 0.0736 | 0.02 | 0.008 | 0.001 | 0.03 |
| 11 | 2033 | 1 | 11 | 3 | 0.0008 | 0.0528 | 0.0736 | 0.02 | 0.008 | 0.001 | 0.03 |
| 12 | 2034 | 1 | 12 | 3 | 0.0008 | 0.0528 | 0.0736 | 0.02 | 0.008 | 0.001 | 0.03 |
| 13 | 2035 | 1 | 13 | 3 | 0.0008 | 0.0528 | 0.0736 | 0.02 | 0.008 | 0.001 | 0.03 |
| 14 | 2036 | 1 | 14 | 3 | 0.0008 | 0.0528 | 0.0736 | 0.02 | 0.008 | 0.001 | 0.03 |
| 15 | 2037 | 1 | 15 | 3 | 0.0008 | 0.0528 | 0.0736 | 0.02 | 0.008 | 0.001 | 0.03 |
| 16 | 2038 | 1 | 16 | 3 | 0.0008 | 0.0528 | 0.0736 | 0.02 | 0.008 | 0.001 | 0.03 |
| 17 | 2039 | 1 | 17 | 1 | 0.0008 | 0.0528 | 0.0736 | 0.00 | 0.001 | 0.000 | 0.003 |
| 18 | 2040 | 1 | 18 | 1 | 0.0008 | 0.0528 | 0.0736 | 0.00 | 0.001 | 0.000 | 0.003 |
| 19 | 2041 | 1 | 19 | 1 | 0.0008 | 0.0528 | 0.0736 | 0.00 | 0.001 | 0.000 | 0.003 |
| 20 | 2042 | 1 | 20 | 1 | 0.0008 | 0.0528 | 0.0736 | 0.00 | 0.001 | 0.000 | 0.003 |
| 21 | 2043 | 1 | 21 | 1 | 0.0008 | 0.0528 | 0.0736 | 0.00 | 0.001 | 0.000 | 0.003 |
| 22 | 2044 | 1 | 22 | 1 | 0.0008 | 0.0528 | 0.0736 | 0.00 | 0.001 | 0.000 | 0.003 |
| 23 | 2045 | 1 | 23 | 1 | 0.0008 | 0.0528 | 0.0736 | 0.00 | 0.001 | 0.000 | 0.003 |
| 24 | 2046 | 1 | 24 | 1 | 0.0008 | 0.0528 | 0.0736 | 0.00 | 0.001 | 0.000 | 0.003 |
| 25 | 2047 | 1 | 25 | 1 | 0.0008 | 0.0528 | 0.0736 | 0.00 | 0.001 | 0.000 | 0.003 |
| 26 | 2048 | 1 | 26 | 1 | 0.0008 | 0.0528 | 0.0736 | 0.00 | 0.001 | 0.000 | 0.003 |
| 27 | 2049 | 1 | 27 | 1 | 0.0008 | 0.0528 | 0.0736 | 0.00 | 0.001 | 0.000 | 0.003 |
| 28 | 2050 | 1 | 28 | 1 | 0.0008 | 0.0528 | 0.0736 | 0.00 | 0.001 | 0.000 | 0.003 |
| 29 | 2051 | 1 | 29 | 1 | 0.0008 | 0.0528 | 0.0736 | 0.00 | 0.001 | 0.000 | 0.003 |
| 30 | 2052 | 1 | 30 | 1 | 0.0008 | 0.0528 | 0.0736 | 0.00 | 0.001 | 0.000 | 0.003 |
| **Total Increased Cancer Risk** | | | **Total** | | | | | 0.60 | 0.225 | 0.018 | **0.85** |

* Third trimester of pregnancy

**Santa Rosa GDF - Fulton Road Traffic Maximum Cancer Risks**
**On-Site Maximum Residential Cancer Risk Receptor - 5.8 m 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

**Values**

**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 |

| | 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 |
| ED = | 0.25 | 2 | 14 | 14 |
| AT = | 70 | 70 | 70 | 70 |
| FAH = | 1.00 | 1.00 | 1.00 | 0.73 |

* 95th percentile breathing rates

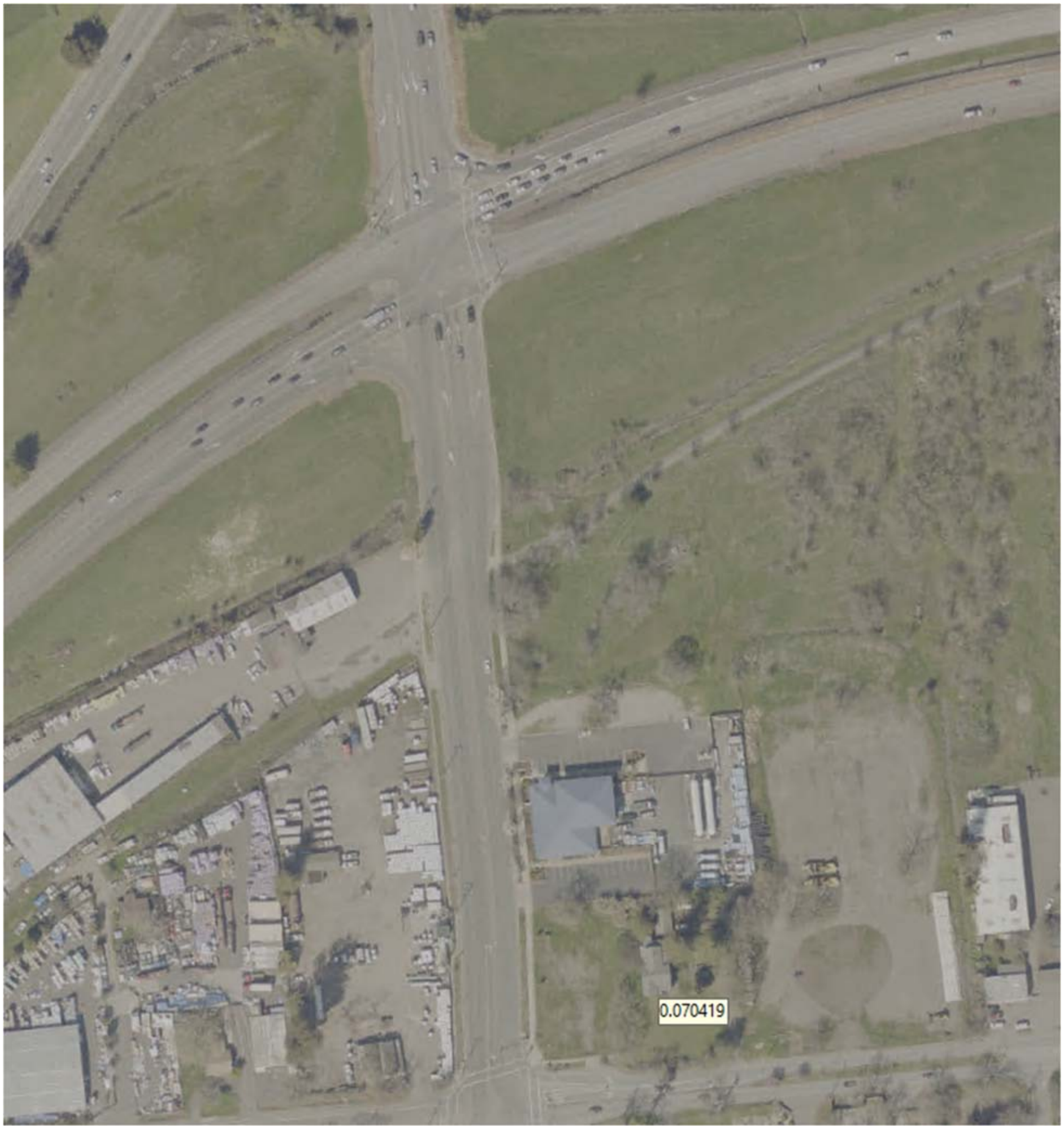
**Road Traffic Cancer Risk by Year - Project MEI Receptor Location**

| | | | | Maximum - Exposure Information | | | | Cancer Risk (per million) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Exposure | | Age | Annual TAC Conc (ug/m3) | | | | | | |
| Exposure | | Duration | | Sensitivity | | Exhaust | Evaporative | | Exhaust | Evaporative | |
| Year | Year | (years) | Age | Factor | DPM | TOG | TOG | DPM | TOG | TOG | Total |
| 0 | 2023 | 0.25 | -0.25 - 0* | 10 | 0.0036 | 0.1481 | 0.2079 | 0.048 | 0.011 | 0.001 | 0.06 |
| 1 | 2023 | 1 | 1 | 10 | 0.0036 | 0.1481 | 0.2079 | 0.58 | 0.139 | 0.011 | 0.73 |
| 2 | 2024 | 1 | 2 | 10 | 0.0036 | 0.1481 | 0.2079 | 0.58 | 0.139 | 0.011 | 0.73 |
| 3 | 2025 | 1 | 3 | 3 | 0.0036 | 0.1481 | 0.2079 | 0.09 | 0.022 | 0.002 | 0.12 |
| 4 | 2026 | 1 | 4 | 3 | 0.0036 | 0.1481 | 0.2079 | 0.09 | 0.022 | 0.002 | 0.12 |
| 5 | 2027 | 1 | 5 | 3 | 0.0036 | 0.1481 | 0.2079 | 0.09 | 0.022 | 0.002 | 0.12 |
| 6 | 2028 | 1 | 6 | 3 | 0.0036 | 0.1481 | 0.2079 | 0.09 | 0.022 | 0.002 | 0.12 |
| 7 | 2029 | 1 | 7 | 3 | 0.0036 | 0.1481 | 0.2079 | 0.09 | 0.022 | 0.002 | 0.12 |
| 8 | 2030 | 1 | 8 | 3 | 0.0036 | 0.1481 | 0.2079 | 0.09 | 0.022 | 0.002 | 0.12 |
| 9 | 2031 | 1 | 9 | 3 | 0.0036 | 0.1481 | 0.2079 | 0.09 | 0.022 | 0.002 | 0.12 |
| 10 | 2032 | 1 | 10 | 3 | 0.0036 | 0.1481 | 0.2079 | 0.09 | 0.022 | 0.002 | 0.12 |
| 11 | 2033 | 1 | 11 | 3 | 0.0036 | 0.1481 | 0.2079 | 0.09 | 0.022 | 0.002 | 0.12 |
| 12 | 2034 | 1 | 12 | 3 | 0.0036 | 0.1481 | 0.2079 | 0.09 | 0.022 | 0.002 | 0.12 |
| 13 | 2035 | 1 | 13 | 3 | 0.0036 | 0.1481 | 0.2079 | 0.09 | 0.022 | 0.002 | 0.12 |
| 14 | 2036 | 1 | 14 | 3 | 0.0036 | 0.1481 | 0.2079 | 0.09 | 0.022 | 0.002 | 0.12 |
| 15 | 2037 | 1 | 15 | 3 | 0.0036 | 0.1481 | 0.2079 | 0.09 | 0.022 | 0.002 | 0.12 |
| 16 | 2038 | 1 | 16 | 3 | 0.0036 | 0.1481 | 0.2079 | 0.09 | 0.022 | 0.002 | 0.12 |
| 17 | 2039 | 1 | 17 | 1 | 0.0036 | 0.1481 | 0.2079 | 0.01 | 0.002 | 0.000 | 0.013 |
| 18 | 2040 | 1 | 18 | 1 | 0.0036 | 0.1481 | 0.2079 | 0.01 | 0.002 | 0.000 | 0.013 |
| 19 | 2041 | 1 | 19 | 1 | 0.0036 | 0.1481 | 0.2079 | 0.01 | 0.002 | 0.000 | 0.013 |
| 20 | 2042 | 1 | 20 | 1 | 0.0036 | 0.1481 | 0.2079 | 0.01 | 0.002 | 0.000 | 0.013 |
| 21 | 2043 | 1 | 21 | 1 | 0.0036 | 0.1481 | 0.2079 | 0.01 | 0.002 | 0.000 | 0.013 |
| 22 | 2044 | 1 | 22 | 1 | 0.0036 | 0.1481 | 0.2079 | 0.01 | 0.002 | 0.000 | 0.013 |
| 23 | 2045 | 1 | 23 | 1 | 0.0036 | 0.1481 | 0.2079 | 0.01 | 0.002 | 0.000 | 0.013 |
| 24 | 2046 | 1 | 24 | 1 | 0.0036 | 0.1481 | 0.2079 | 0.01 | 0.002 | 0.000 | 0.013 |
| 25 | 2047 | 1 | 25 | 1 | 0.0036 | 0.1481 | 0.2079 | 0.01 | 0.002 | 0.000 | 0.013 |
| 26 | 2048 | 1 | 26 | 1 | 0.0036 | 0.1481 | 0.2079 | 0.01 | 0.002 | 0.000 | 0.013 |
| 27 | 2049 | 1 | 27 | 1 | 0.0036 | 0.1481 | 0.2079 | 0.01 | 0.002 | 0.000 | 0.013 |
| 28 | 2050 | 1 | 28 | 1 | 0.0036 | 0.1481 | 0.2079 | 0.01 | 0.002 | 0.000 | 0.013 |
| 29 | 2051 | 1 | 29 | 1 | 0.0036 | 0.1481 | 0.2079 | 0.01 | 0.002 | 0.000 | 0.013 |
| 30 | 2052 | 1 | 30 | 1 | 0.0036 | 0.1481 | 0.2079 | 0.01 | 0.002 | 0.000 | 0.013 |
| **Total Increased Cancer Risk** | | | **Total** | | | | | 2.64 | 0.629 | 0.052 | **3.32** |

* Third trimester of pregnancy

BAAQMD RASTER Screening Data – Highway Cancer Risk Impacts at MEI

BAAQMD RASTER Screening Data – Highway $PM_{2.5}$ Concentration Impacts at MEI



BAAQMD RASTER Screening Data – Highway Cancer Risk Impacts at Future Resident

BAAQMD RASTER Screening Data – Highway $PM_{2.5}$ Concentration Impacts at Future Resident