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M E M O

Date: January 8, 2019

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From: **James Reyff &**
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RE: 325 Yolanda Residential Air Quality Assessment – Santa Rosa, CA
SUBJECT: Air Quality Impacts from Residences at 325 Yolanda Avenue Job#18-139

This memo addresses the air quality impacts, health risk issues, and greenhouse gas (GHG) impacts caused by the construction and operation of the proposed multi-family residential apartments at 325 Yolanda Avenue in Santa Rosa, California. Illingworth & Rodkin, Inc. prepared the air quality and greenhouse gas assessment[1], which addressed air quality impacts and GHG emissions from the combination of an In-N-Out restaurant and the proposed residential development. This memo addresses these same impacts but does not include the construction or operation impacts associated with the proposed In-N-Out restaurant. The CalEEMod modeling, the Air Quality Dispersion Modeling (AERMOD), and the cancer risk calculations recommended by the Bay Area Air Quality Management District (BAAQMD) were used in this analysis. Overall, it was found that the construction and operation of only the proposed multi-family residential apartments would have similar or slightly less impacts in terms of air quality and health risks. The mitigation measures recommended for the combined project would apply to the residential project. GHG emissions associated with only the residential portion of the project would be considered less than significant. The effects of the residential project are discussed below, where *Scenario 1* includes the In-N-Out restaurant and residential development and *Scenario 2* only includes the multi-family residential apartments.

1 Illingworth & Rodkin, Inc., *325 Yolanda Avenue Air Quality & Greenhouse Gas Assessment*. 8 January 2019.

Methodology and Significance Thresholds

The BAAQMD *CEQA Air Quality Guidelines*, published in 2017, include the latest significance thresholds recommended by the District. These thresholds were used in this analysis (see Table 1.)

Table 1. Air Quality Significance Thresholds

Pollutant	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (lbs./day)	Average Daily Emissions (lbs./day)	Annual Average Emissions (tons/year)
Criteria Air Pollutants			
ROG	54	54	10
NO_x	54	54	10
PM_{10}	82	82	15
$PM_{2.5}$	54	54	10
CO	Not Applicable	9.0 ppm (8-hour average) or 20.0 ppm (1-hour average)	
Fugitive Dust	Construction Dust Ordinance or other Best Management Practices	Not Applicable	
Single-Source Health Risks and Hazards for New Sources or New Receptors			
Excess Cancer Risk	> 10.0 per one million		
Chronic or Acute Hazard Index	> 1.0		
Incremental annual average $PM_{2.5}$	> 0.3 µg/m^3		
Cumulative Health Risks and Hazards for Sensitive Receptors			
Excess Cancer Risk	> 100 per one million		
Chronic Hazard Index	> 10.0		
Annual Average $PM_{2.5}$	> 0.8 µg/m^3		
Greenhouse Gas Emissions			
Land Use Projects – direct and indirect emissions	Compliance with a Qualified GHG Reduction Strategy OR 1,100 metric tons annually or 4.6 metric tons per capita (for 2020) *		

Note: ROG = reactive organic gases, NOx = nitrogen oxides, PM_{10} = course particulate matter or particulates with an aerodynamic diameter of 10 micrometers (µm) or less, $PM_{2.5}$ = fine particulate matter or particulates with an aerodynamic diameter of 2.5µm or less. GHG = greenhouse gases.

*BAAQMD does not have a recommended post-2020 GHG threshold.

Air Quality Impacts

The California Emissions Estimator Model (CalEEMod) Version 2016.3.2 was used to estimate emissions from construction and operation of the site assuming full build-out of the project. The project land use types and size, and anticipated construction schedule were input to CalEEMod. The model output from CalEEMod is included as *Attachment 2*.

Construction Period Emissions

A construction build-out scenario, including equipment list and schedule, was based CalEEMod defaults with some information (i.e. equipment list and schedule) being modified by the project applicant. The proposed project land uses were input into CalEEMod, which included: **252 dwelling units** and **214,167 square feet** (sf) entered as "**Apartments Mid Rise**" and **410 parking spaces** entered as "**Parking Lot**" all on an 8.4-acre site. Additionally, 17,360-sf of building demolition was entered into the model.

Table 2 compares the construction criteria air pollutants from the Scenario 1 versus Scenario 2. Construction activity is anticipated to result in slightly lower emissions than those reported previously in the combined restaurant and residential report.

Table 2. Scenario 1 and Scenario 2 Construction Emissions

Scenario	ROG	NOx	Exhaust PM_{10}	Exhaust $PM_{2.5}$
Scenario 1 Total Project Construction Emissions (tons)	2.1 tons	4.0 tons	0.17 tons	0.16 tons
Average Daily Emissions (pounds)[1]	10.5 lbs./day	20 lbs./day	0.85 lbs./day	0.78 lbs./day
Scenario 2 Total Project Construction Emissions (tons)	2.0 tons	3.8 tons	0.16 tons	0.15 tons
Average Daily Emissions (pounds)[1]	10 lbs./day	19 lbs./day	0.80 lbs./day	0.75 lbs/day
BAAQMD Thresholds (pounds per day)	*54* lbs./day	*54* lbs./day	*82* lbs./day	*54* lbs./day
Exceed Threshold?	**No**	**No**	**No**	**No**

[1]Assumes 400 construction workdays

Operational Period Emissions

Operational air emissions from the project would be generated primarily from autos driven by future residents and employees. Evaporative emissions from architectural coatings and maintenance products (classified as consumer products) are typical emissions from these types of uses. CalEEMod was also used to estimate emissions from operation of the proposed project assuming full build-out in the year 2021. The same operational inputs for the multi-family residences were used as described within in the full report.

As shown in Table 3, the Scenario 2 operational period emissions would be less than the combined restaurant and residential operational emissions. The Scenario 2 emissions do not exceed the BAAQMD thresholds.

Table 3. Scenario 1 and Scenario 2 Operational Emissions

Scenario	ROG	NOx	PM_{10}	$PM_{2.5}$
Scenario 1 2021 Project Operational Emissions (tons/year)	2.6 tons	6.1 tons	<2.5 tons	<0.8 tons
2021 Existing Operational Emissions (tons/year)	0.1 tons	0.2 tons	0.1 tons	0.03 tons
Scenario 1 Net Annual Emissions	**2.5 tons**	**5.9 tons**	**<2.4 tons**	**<0.77 tons**
Scenario 1 2021 Project Operational Emissions (lbs./day)[1]	**13.7 lbs.**	**32.3 lbs.**	**13.2 lbs.**	**4.2 lbs.**
Scenario 2 2021 Project Operational Emissions (tons/year)	1.5 tons	2.4 tons	1.2 tons	0.3 tons
2021 Existing Operational Emissions (tons/year)	0.1 tons	0.2 tons	0.1 tons	0.03 tons
Scenario 2 Net Annual Emissions	**1.4 tons**	**2.2 tons**	**1.1 tons**	**0.27 tons**
Scenario 2 2021 Project Operational Emissions (lbs./day)[1]	**7.7 lbs.**	**12.0 lbs.**	**6.0 lbs.**	**1.5 lbs.**
BAAQMD Thresholds (tons /year)	*10 tons*	*10 tons*	*15 tons*	*10 tons*
BAAQMD Thresholds (pounds/day)	*54 lbs.*	*54 lbs.*	*82 lbs.*	*54 lbs.*
Exceed Threshold?	**No**	**No**	**No**	**No**

Construction Community Health Risk Impacts

Construction Emissions

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 impact issues associated with construction emissions are cancer risk and exposure to $PM_{2.5}$. Diesel exhaust 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 $PM_{2.5}$.[2] This assessment included dispersion modeling to predict the offsite and onsite concentrations resulting from project construction, so that lifetime cancer risks and non-cancer health effects could be evaluated.

The construction start date was estimated to be January 2019 and last till July 2020 with 400 workdays anticipated over the 18 months.

The CalEEMod model provided total annual PM_{10} exhaust emissions (assumed to be DPM) for the off-road construction equipment and for exhaust emissions from on-road vehicles, with total emissions from all construction stages as 0.1233 tons (247 pounds). The on-road emissions are a

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

result of haul truck travel during demolition and grading activities, worker travel, and vendor deliveries during construction. A trip length of one mile was used to represent vehicle travel while at or near the construction site. It was assumed that these emissions from on-road vehicles traveling at or near the site would occur at the construction site. Fugitive $PM_{2.5}$ dust emissions were calculated by CalEEMod as 0.0601 tons (120 pounds) for the overall construction period. The Scenario 1 DPM and Fugitive $PM_{2.5}$ emissions used were 0.1590 tons (318 pounds) and 0.0822 tons (164 pounds), respectively.

Dispersion Modeling

The U.S. EPA AERMOD dispersion model was used to predict concentrations of DPM and $PM_{2.5}$ concentrations at sensitive receptors (residences) in the vicinity of the project construction area. The AERMOD dispersion model is a BAAQMD-recommended model for use in modeling analysis of these types of emission activities for CEQA projects.[3] The modeling utilized two area sources to represent the on-site construction emissions, one for exhaust emissions and one for fugitive dust emissions. To represent the construction equipment exhaust emissions, an emission release height of 6 meters (19.7 feet) was used for the area source. The elevated source height reflects the height of the equipment exhaust pipes plus an additional distance for the height of the exhaust plume above the exhaust pipes to account for plume rise of the exhaust gases. For modeling fugitive $PM_{2.5}$ emissions, a near-ground level release height of 2 meters (6.6 feet) was used for the area source. Emissions from the construction equipment and on-road vehicle travel were distributed throughout the modeled area sources. Construction emissions were modeled as occurring daily between 7 a.m. to 4 p.m., when the majority of construction activity would occur.

The modeling used a 5-year meteorological data set (2009-2013) from the Sonoma County Airport prepared for use with the AERMOD model by the California Air Resource Board. Annual DPM and $PM_{2.5}$ concentrations from construction activities at each project site during the 2019-2020 period were calculated using the model. DPM and $PM_{2.5}$ concentrations were calculated at nearby sensitive receptor locations. Receptor heights of 1.5 meters (4.9 feet) were used to represent the breathing height of residents in nearby single-family homes.

Health Risk Impacts

Results of this assessment indicate that the maximum excess residential cancer risks would exceed the BAAQMD significance threshold of 10 in one million and the maximum $PM_{2.5}$ concentrations would exceed the BAAQMD significance threshold of 0.3 $\mu g/m^3$. These risk values, though, are less than the risk values reported in the combined restaurant and residential health risk assessment. Figure 1 shows that the maximum-modeled DPM and $PM_{2.5}$ concentrations occurred at a mobile home north of the project site, which is the same MEI identified in the combined restaurant and residences HRA.

3 Bay Area Air Quality Management District (BAAQMD), 2012, *Recommended Methods for Screening and Modeling Local Risks and Hazards, Version 3.0.* May.

Table 4 summarizes the maximum cancer risks, $PM_{2.5}$ concentrations, and health hazard indexes (HI) for project related construction activities affecting the residential MEI and compares the Scenario 1 versus the Scenario 2 risk values. *Attachment 3* to this report includes the emission calculations used for the construction area source modeling and the cancer risk calculations.

Figure 1. Project Construction Sites, Locations of Off-Site Sensitive Receptors, and Locations of Maximum Cancer Risk and $PM_{2.5}$ Impacts

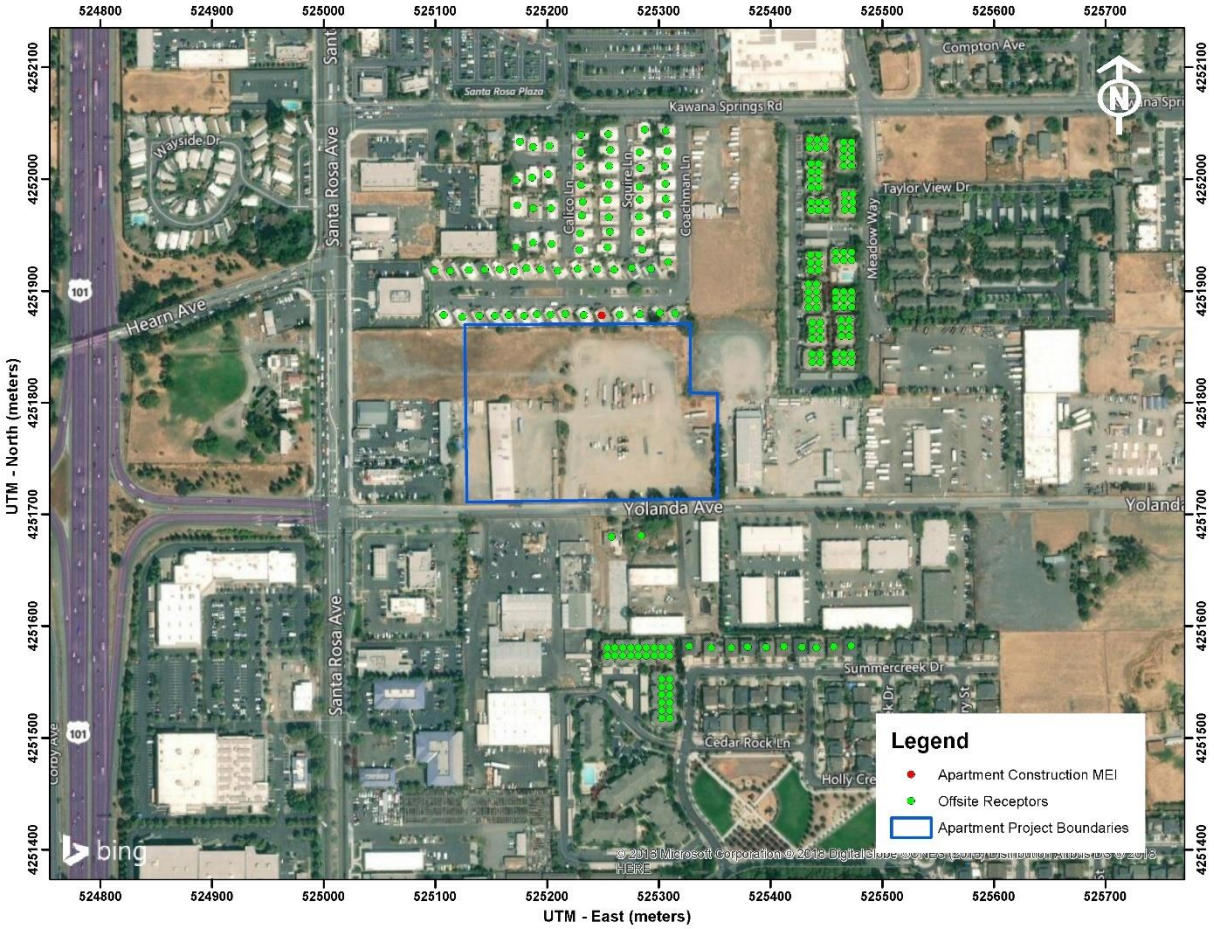

Table 4. Scenario 1 and Scenario 2 Project Construction Risk Values at the MEI

Source	Maximum Cancer Risk (per million)	Maximum Annual $PM_{2.5}$ ($\mu g/m^3$)	Maximum Hazard Index
Scenario 1 Project Construction (Restaurant & Residences)			
Unmitigated	42.7 (Infant)	0.41	0.04
Mitigated	5.1 (Infant)	0.08	<0.01
Scenario 2 Project Construction (Residences Only)			
Unmitigated	39.0 (Infant)	0.41	0.04
Mitigated	4.5 (Infant)	0.09	<0.01
BAAQMD Single-Source Threshold	***>10.0***	***>0.3***	***>1.0***
Significant?			
Unmitigated	***Yes***	***Yes***	*No*
Mitigated	*No*	*No*	*No*

In terms of health risks, construction of only the multi-family housing would result in slightly lower maximum cancer risk (assuming infant exposure) but the maximum annual $PM_{2.5}$ and maximum HI would be similar to the Scenario 1 results. With implementation of Mitigation Measure AQ-2 exposure risks would be reduced to levels below significance for single source emissions.

Cumulative Impact on Construction MEI

Cumulative community risk impacts were addressed through an evaluation of TAC sources located within 1,000 feet of the construction MEI (see Figure 2). These sources include Santa Rosa Avenue, Yolanda Avenue, Kawana Springs Road, and stationary sources identified by BAAQMD (i.e., Plants 111902, 7658, 23123, 111340, and 18271). Community risk impacts from these sources upon the construction MEI are reported in Table 5. Note that the construction MEI was at the same location as the construction MEI identified in the combined report, so risk values from that report were used in this memo. Since the Scenario 2 risk values in Table 4 are similar or slightly less than the Scenario 1 risk values, the combined cancer risk, PM2.5 concentrations and Hazard risk values, which includes unmitigated and mitigated, would also not exceed the BAAQMD cumulative thresholds as seen in Table 5. Details of the modeling and community risk calculations are included in *Attachment 3* of the Illingworth & Rodkin, Inc. air quality and greenhouse gas assessment.

Table 5. Scenario 1 and Scenario 2 Impacts from Combined Sources at Construction MEI

Source	Maximum Cancer Risk (per million)	Maximum Annual $PM_{2.5}$ ($\mu g/m^3$)	Maximum Hazard Index
Scenario 2 Project Construction (Residences Only)			
Unmitigated	39.0 (Infant)	0.41	0.04
Mitigated	4.5 (Infant)	0.09	<0.01
BAAQMD Single-Source Threshold	***>10.0***	***>0.3***	***>1.0***
Significant?			
Unmitigated	***Yes***	***Yes***	*No*
Mitigated	*No*	*No*	*No*
Cumulative Sources			
Santa Rosa Avenue (north-south) at 730 feet east ADT 32,045	1.9	0.07	<0.03
Yolanda Avenue (east-west) at 570 feet north ADT 15,930	1.5	0.06	<0.03
Kawana Springs (east-west) at 580 feet south ADT 13,365	0.6	0.02	<0.03
Plant #111902 (Gas Dispensing Facility) at 780 feet	0.3	-	<0.01
Plant #7658 (Crematory) at 940 feet	0.01	<0.01	<0.01
Plant #23123 (Gasoline Tank)	1.6	-	0.01
Plant #111340 (Gas Dispensing Facility) at 800 feet	0.6	-	0.07
Plant #18271(Generator) at 480 feet	0.4	<0.01	<0.01
Cumulative Total			
Scenario 1Unmitigated	49.6	0.58	0.23
Scenario 1 Mitigated	12.0	0.25	0.20
Scenario 2 Unmitigated	45.9	0.58	0.23
Scenario 2 Mitigated	11.4	0.26	0.20
BAAQMD Cumulative Source Threshold	***>100***	***>0.8***	***>10.0***
Significant?			
Unmitigated	*No*	*No*	*No*
Mitigated	*No*	*No*	*No*

Greenhouse Gas Emissions

In terms of GHG, the overall emissions associated with the operation of the residential apartments would be less than combined restaurant and residences emissions. A majority of this reduction would be due to the removal of the restaurant mobile and idling emissions. Scenario 2 emissions and their associated source category are listed in Table 5. The Scenario 1 net emissions (metric tons) and the Scenario 1 service population emissions (MT CO_{2e}/year/service population) are also listed.

Significance Thresholds

The BAAQMD's CEQA Air Quality Guidelines do not use quantified thresholds for projects that are in a jurisdiction with a qualified GHG reductions plan (i.e., a Climate Action Plan). The plan has to address emissions associated with the period that the project would operate (e.g., beyond year 2020). For quantified emissions, the guidelines recommended a GHG threshold of 1,100 metric tons or 4.6 metric tons (MT) per capita. These thresholds were developed based on meeting the 2020 GHG targets set in the scoping plan that addressed AB 32. Development of the project would occur beyond 2020, so a threshold that addresses a future target is appropriate.

Although BAAQMD has not published a quantified threshold for 2030 yet, this assessment uses a "Substantial Progress" efficiency metric of 2.6 MT CO_2e/year/service population and a bright-line threshold of 660 MT CO_{2e}/year based on the GHG reduction goals of EO B-30-15. The service population metric of 2.6 is calculated for 2030 based on the 1990 inventory and the projected 2030 statewide population and employment levels[4]. The 2030 bright-line threshold is a 40 percent reduction of the 2020 1,100 MT CO_{2e}/year threshold.

Additionally, the City of Santa Rosa has a Climate Action Plan (CAP) that outlines and address GHG reduction targets for the city. It is a recognized Qualified GHG Reduction Strategy. This assessment uses the City of Santa Rosa's efficiency metric of 2.3 MT CO_{2e}/year/service population for the year 2035 as stated within the City's CAP.

Service Population Emissions

In terms of the total future population, only the number of future residents would be included. Thus, using the 2.68 persons per household 2018 estimate for Santa Rosa, the number of future residents is estimated to be 675 individuals. The number of future resident was estimated by multiplying the total number of units (i.e. 252 units) by the persons per household rate for Santa Rosa found in the California Department of Finance Population and Housing Estimate report.[5]

Construction Emissions

GHG emissions associated with construction were computed to be 790 MT of CO2e under Scenario 2, instead of 844 MT of CO_2e for Scenario 1. These are the emissions from on-site operation of construction equipment, vendor and hauling truck trips, and worker trips.

Operational Emissions

The CalEEMod model, along with the multi-family project vehicle trip generation rates, was used to estimate daily emissions associated with operation of the fully-developed site under the

4 Association of Environmental Professionals, 2016. *Beyond 2020 and Newhall: A Field Guide to New CEQA Greenhouse Gas Thresholds and Climate Action Plan Targets for California*. April.
5 State of California, Department of Finance, *E-5 Population and Housing Estimates for Cities, Counties and the State — January 1, 2011-2018*. Sacramento, California, May 2018.

proposed project. As shown in Table 5, annual net emissions resulting from operation of the proposed residential project are predicted to be 1,529 MT of CO_2e for the year 2021, 1,238 MT of CO_{2e} for the year 2030 and 1,173 MT of CO_{2e} for the year 2035. The Service Population Emissions would be 2.5, 2.0, and 2.0 MT CO_{2e}/year/service population for the years 2021, 2030, and 2035, respectively.

To be considered significant, the project must exceed both the GHG significance threshold in metric tons per year and the service population significance threshold. The residential project only exceeds the 2030 bright-line threshold of 660 MT CO_{2e}/year; it does not exceed the service population significance threshold for 2030 or 2035. Therefore, the project would have a *less-than-significant* impact regarding GHG emissions.

Table 5. Scenario 1 and Scenario 2 Annual Project GHG Emissions (CO_2e) in Metric Tons

Source Category	Existing in 2021	Proposed Project in 2021	Proposed Project in 2030	Proposed Project in 2035
Area	<1	13	13	13
Energy Consumption	44	263	263	263
Mobile	114	1,342	1,051	986
Solid Waste Generation	10	58	58	58
Water Usage	5	27	27	27
Total	174	1,703	1,412	1,347
Scenario 1 Net Emissions New Net Emissions		**2761** **1,529**	**2,256** **1,238**	**2,139** **1,173**
Significance Threshold			***660 MT CO_{2e}/yr***	
Service Population Emissions (MT CO2e/year/service population)				
Scenario 1 Service Population Emissions[1]		4.2	3.4	3.2
Scenario 2 Service Population Emissions[2]		2.5	2.0	2.0
Significance Threshold			***2.6 in 2030***	***2.3 in 2035****
Significant (Exceeds both thresholds)?			***No***	***No***

[1]Based on a Service Population of 711 residents and employees. [2]Based on a Service Population of 675 residents.
[*] City of Santa Rosa Service Population Emissions

Attachments

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

Attachment 2 includes the CalEEMod output for project construction TAC emissions. Also included are any modeling assumptions.

Attachment 3 the construction health risk assessment. AERMOD dispersion modeling files for this assessment, which are quite voluminous, are available upon request and would be provided in digital format.

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.[6] These guidelines incorporate substantial changes designed to provide for enhanced protection of children, as required by State law, compared to Scenario 1 published risk assessment guidelines. CARB has provided additional guidance on implementing OEHHA's recommended methods.[7] This HRA used the recent 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.[8] 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 are 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 of exposure, and the exposure duration. 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). As recommended by the BAAQMD, 95th percentile breathing rates are used for the third trimester and infant exposures, and 80th percentile breathing rates for child and adult exposures. Additionally, CARB and the BAAQMD recommend the use of a residential exposure duration of 30 years for sources with long-term emissions (e.g., roadways).

6 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.
7 CARB, 2015. *Risk Management Guidance for Stationary Sources of Air Toxics*. July 23.
8 BAAQMD, 2016. *BAAQMD Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines*. December 2016.

Under Scenario 1 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 Scenario 2 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 that would 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)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

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

Parameter	*Exposure Type* →	Infant		Child		Adult
	Age Range →	3rd Trimester	0<2	2 < 9	2 < 16	16 - 30
DPM Cancer Potency Factor $(mg/kg\text{-}day)^{-1}$		1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
Daily Breathing Rate (L/kg-day)*		361	1,090	631	572	261
Inhalation Absorption Factor		1	1	1	1	1
Averaging Time (years)		70	70	70	70	70
Exposure Duration (years)		0.25	2	14	14	14
Exposure Frequency (days/year)		350	350	350	350	350
Age Sensitivity Factor		10	10	3	3	1
Fraction of Time at Home		0.85-1.0	0.85-1.0	0.72-1.0	0.72-1.0	0.73

* 95th percentile breathing rates for 3rd trimester and infants and 80th percentile for children and adults

Non-Cancer Hazards

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

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

Annual $PM_{2.5}$ Concentrations

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

Attachment 2: CalEEMod Modeling Output

Attachment 3: Construction Health Risk Calculations

325 Yolanda Avenue, Santa Rosa, CA (Apartment Construction)

DPM Emissions and Modeling Emission Rates - Unmitigated

Emissions Model Year	Activity	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2019	Construction	0.1120	DPM	224.0	0.06819	8.59E-03	34,099	**2.52E-07**
2020	Construction	0.0113	DPM	22.6	0.00688	8.67E-04	34,099	**2.54E-08**
Total		***0.1233***		***246.6***	***0.0751***	***0.0095***		

Operation Hours

hr/day = 9 (7am - 4pm)

days/yr = 365

hours/year = 3285

PM2.5 Fugitive Dust Emissions for Modeling - Unmitigated

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2019	Construction	FUG	0.0594	118.8	0.03616	4.56E-03	34,099	**1.34E-07**
2020	Construction	FUG	0.0007	1.5	0.00044	5.60E-05	34,099	**1.64E-09**
Total			***0.0601***	***120.3***	***0.0366***	***0.0046***		

Operation Hours

hr/day = 9 (7am - 4pm)

days/yr = 365

hours/year = 3285

DPM Construction Emissions and Modeling Emission Rates - With Mitigation

Emissions Model Year	Activity	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2019	Construction	0.0127	DPM	25.4	0.00773	9.74E-04	34,099	**2.86E-08**
2020	Construction	0.0016	DPM	3.1	0.00095	1.20E-04	34,099	**3.51E-09**
Total		***0.0143***		***28.5***	***0.0087***	***0.0011***		

Operation Hours

hr/day = 9 (7am - 4pm)

days/yr = 365

hours/year = 3285

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

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2019	Construction	FUG	0.0186	37.2	0.01132	1.43E-03	34,099	**4.18E-08**
2020	Construction	FUG	0.0007	1.5	0.00044	5.60E-05	34,099	**1.64E-09**
Total			***0.0193***	***38.7***	***0.0118***	***0.0015***		

Operation Hours

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

325 Yolanda Avenue, Santa Rosa, CA (Apartment Construction)
Construction Health Impacts Summary

Maximum Impacts at Construction MEI Location - Unmitigated

Emissions Year	Maximum Concentrations: Exhaust PM10/DPM ($\mu g/m^3$)	Maximum Concentrations: Fugitive PM2.5 ($\mu g/m^3$)	Cancer Risk (per million): Child	Cancer Risk (per million): Adult	Hazard Index (-)	Maximum Annual PM2.5 Concentration ($\mu g/m^3$)
2019	0.2158	0.2092	35.45	0.62	0.043	0.41
2020	0.0218	0.0026	3.57	0.06	0.004	0.02
Total	-	-	**39.0**	**0.7**	-	-
Maximum	0.2158	0.2092	**-**	**-**	**0.04**	**0.41**

Maximum Impacts at Construction MEI Location - With Mitigation

Emissions Year	Maximum Concentrations: Exhaust PM10/DPM ($\mu g/m^3$)	Maximum Concentrations: Fugitive PM2.5 ($\mu g/m^3$)	Cancer Risk (per million): Child	Cancer Risk (per million): Adult	Hazard Index (-)	Maximum Annual PM2.5 Concentration ($\mu g/m^3$)
2019	0.0245	0.0653	4.02	0.07	0.005	0.09
2020	0.0030	0.0026	0.49	0.01	0.001	0.01
Total	-	-	**4.5**	**0.08**	-	-
Maximum	0.0245	0.0653	**-**	**-**	**0.005**	**0.09**

325 Yolanda Avenue, Santa Rosa, CA - Unmitigated Emissions
Maximum DPM Cancer Risk Calculations From Apartment 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				Adult - Exposure Information					
							Modeled					
Exposure Year	**Exposure Duration (years)**	**Age**	**DPM Conc (ug/m3) Year**	**DPM Conc (ug/m3) Annual**	**Age Sensitivity Factor**	**Infant/Child Cancer Risk (per million)**	**DPM Conc (ug/m3) Year**	**DPM Conc (ug/m3) Annual**	**Age Sensitivity Factor**	**Adult Cancer Risk (per million)**	**Fugitive PM2.5**	**Total PM2.5**
0	0.25	-0.25 - 0*		-	-				-	-		
1	1	0 - 1	2019	0.2158	10	35.45	2019	0.2158	1	0.62	0.2092	0.4056
2	1	1 - 2	2020	0.0218	10	3.57	2020	0.0218	1	0.06	0.0026	0.0243
3	1	2 - 3			3	0.00			1	0.00		
4	1	3 - 4			3	0.00			1	0.00		
5	1	4 - 5			3	0.00			1	0.00		
6	1	5 - 6			3	0.00			1	0.00		
7	1	6 - 7			3	0.00			1	0.00		
8	1	7 - 8			3	0.00			1	0.00		
9	1	8 - 9			3	0.00			1	0.00		
10	1	9 - 10			3	0.00			1	0.00		
11	1	10 - 11			3	0.00			1	0.00		
12	1	11 - 12			3	0.00			1	0.00		
13	1	12 - 13			3	0.00			1	0.00		
14	1	13 - 14			3	0.00			1	0.00		
15	1	14 - 15			3	0.00			1	0.00		
16	1	15 - 16			3	0.00			1	0.00		
17	1	16-17			1	0.00			1	0.00		
18	1	17-18			1	0.00			1	0.00		
19	1	18-19			1	0.00			1	0.00		
20	1	19-20			1	0.00			1	0.00		
21	1	20-21			1	0.00			1	0.00		
22	1	21-22			1	0.00			1	0.00		
23	1	22-23			1	0.00			1	0.00		
24	1	23-24			1	0.00			1	0.00		
25	1	24-25			1	0.00			1	0.00		
26	1	25-26			1	0.00			1	0.00		
27	1	26-27			1	0.00			1	0.00		
28	1	27-28			1	0.00			1	0.00		
29	1	28-29			1	0.00			1	0.00		
30	1	29-30			1	0.00			1	0.00		
Total Increased Cancer Risk						**39.0**				**0.68**		

* Third trimester of pregnancy

325 Yolanda Avenue, Santa Rosa, CA - Mitigated Emissions
Maximum DPM Cancer Risk Calculations From Apartment Construction
Impacts at Off-Site Receptors-1.5 meter

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				Adult - Exposure Information					
							Modeled					
Exposure Year	**Exposure Duration (years)**	**Age**	**DPM Conc (ug/m3) Year**	**DPM Conc (ug/m3) Annual**	**Age Sensitivity Factor**	**Infant/Child Cancer Risk (per million)**	**DPM Conc (ug/m3) Year**	**DPM Conc (ug/m3) Annual**	**Age Sensitivity Factor**	**Adult Cancer Risk (per million)**	**Fugitive PM2.5**	**Total PM2.5**
0	0.25	-0.25 - 0*		-	-				-	-		
1	1	0 - 1	2019	0.0245	10	4.02	2019	0.0245	1	0.07	0.0653	0.0898
2	1	1 - 2	2020	0.0030	10	0.49	2020	0.0030	1	0.01	0.0026	0.0056
3	1	2 - 3			3	0.00			1	0.00		
4	1	3 - 4			3	0.00			1	0.00		
5	1	4 - 5			3	0.00			1	0.00		
6	1	5 - 6			3	0.00			1	0.00		
7	1	6 - 7			3	0.00			1	0.00		
8	1	7 - 8			3	0.00			1	0.00		
9	1	8 - 9			3	0.00			1	0.00		
10	1	9 - 10			3	0.00			1	0.00		
11	1	10 - 11			3	0.00			1	0.00		
12	1	11 - 12			3	0.00			1	0.00		
13	1	12 - 13			3	0.00			1	0.00		
14	1	13 - 14			3	0.00			1	0.00		
15	1	14 - 15			3	0.00			1	0.00		
16	1	15 - 16			3	0.00			1	0.00		
17	1	16-17			1	0.00			1	0.00		
18	1	17-18			1	0.00			1	0.00		
19	1	18-19			1	0.00			1	0.00		
20	1	19-20			1	0.00			1	0.00		
21	1	20-21			1	0.00			1	0.00		
22	1	21-22			1	0.00			1	0.00		
23	1	22-23			1	0.00			1	0.00		
24	1	23-24			1	0.00			1	0.00		
25	1	24-25			1	0.00			1	0.00		
26	1	25-26			1	0.00			1	0.00		
27	1	26-27			1	0.00			1	0.00		
28	1	27-28			1	0.00			1	0.00		
29	1	28-29			1	0.00			1	0.00		
30	1	29-30			1	0.00			1	0.00		
Total Increased Cancer Risk						**4.5**				**0.08**		

* Third trimester of pregnancy

325 YOLANDA AVENUE AIR QUALITY & GREENHOUSE GAS ASSESSMENT

Santa Rosa, CA

January 8, 2019

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Project: 18-146

Introduction

The purpose of this report is to address air quality, community risk, and odor impacts associated with the proposed In-N-Out restaurant and multi-family residential apartments located at 325 Yolanda Avenue in Santa Rosa, California. The air quality impacts would be associated with demolition of the existing uses at the site, construction of the new buildings and infrastructure, and operation of the project. The potential odor impacts would be associated with the operation of the fast-food restaurant. In addition, the potential construction health risk impact to nearby sensitive receptors and the impact of existing toxic air contaminant (TAC) sources affecting the proposed residences were evaluated. This analysis addresses those issues following the guidance provided by the Bay Area Air Quality Management District (BAAQMD).

Project Description

The existing site consists of two undeveloped parcels totaling 10.46 acres. The proposed project would include an approximately 3,867 square foot (sf) In-N-Out restaurant and 15 residential apartments (totaling to 252 dwelling units). The In-N-Out restaurant would include a single drive-thru lane and parking stalls, accessible via Santa Rosa Avenue and Yolanda Avenue, on approximately two acres. The project proposes 410 residential parking spaces and 84 parking spaces for the In-N-Out restaurant.

The project site is bounded by Santa Rosa Avenue to the East and Yolanda Avenue to the South. A mobile home park is adjacent to the northern project site boundary and additional residences (single-family homes and apartments) are located south-east of the project site.

Setting

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

Air Pollutants of Concern

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

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

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

Diesel exhaust is the predominant TAC in urban air and is estimated to represent about three-quarters of the cancer risk from TACs (based on the Bay Area average). According to the California Air Resources Board (CARB), diesel exhaust is a complex mixture of gases, vapors, and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the CARB, and are listed as carcinogens either under the State's Proposition 65 or under the Federal Hazardous Air Pollutants programs.

CARB has adopted and implemented a number of regulations for stationary and mobile sources to reduce emissions of diesel particulate matter (DPM). Several of these regulatory programs affect medium and heavy-duty diesel trucks that represent the bulk of DPM emissions from California highways. These regulations include the solid waste collection vehicle (SWCV) rule, in-use public and utility fleets, and the heavy-duty diesel truck and bus regulations. In 2008, CARB approved a new regulation to reduce emissions of DPM and nitrogen oxides from existing on-road heavy-duty diesel fueled vehicles.[1] The regulation requires affected vehicles to meet specific performance requirements between 2014 and 2023, with all affected diesel vehicles required to have 2010 model-year engines or equivalent by 2023. These requirements are phased in over the compliance period and depend on the model year of the vehicle.

The BAAQMD is the regional agency tasked with managing air quality in the region. At the State level, the CARB (a part of the California Environmental Protection Agency [EPA]) oversees regional air district activities and regulates air quality at the State level. The BAAQMD has recently published California Environmental Quality Act (CEQA) Air Quality Guidelines that are used in this assessment to evaluate air quality impacts of projects.[2]

Odors

Odor impacts are subjective in nature and are generally regarded as an annoyance rather than a health hazard. The ability to detect and react to odors varies considerably among people. A

[1] Available online: http://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm. Accessed: November 21, 2014.
[2] Bay Area Air Quality Management District. 2011. BAAQMD CEQA Air Quality Guidelines. May.

strong or unfamiliar odor is more easily detected and are more likely to cause complaints. BAAQMD responds to odor complaints from the public and considers a source to have a substantial number of odor complaints if the complaint history includes five or more confirmed complaints per year averaged over a 3-year period. Facilities that are regulated by CalRecycle (e.g. landfill, composting, etc.) are required to have *Odor Impact Minimization Plans* in place.

Regulatory Agencies

CARB has adopted and implemented a number of regulations for stationary and mobile sources to reduce emissions of DPM. Several of these regulatory programs affect medium and heavy-duty diesel trucks that represent the bulk of DPM emissions from California highways. These regulations include the solid waste collection vehicle (SWCV) rule, in-use public and utility fleets, and the heavy-duty diesel truck and bus regulations. In 2008, CARB approved a new regulation to reduce emissions of DPM and nitrogen oxides from existing on-road heavy-duty diesel fueled vehicles.[3] The regulation requires affected vehicles to meet specific performance requirements between 2014 and 2023, with all affected diesel vehicles required to have 2010 model-year engines or equivalent by 2023. These requirements are phased in over the compliance period and depend on the model year of the vehicle.

The BAAQMD is the regional agency tasked with managing air quality in the region. At the State level, the CARB (a part of the California Environmental Protection Agency [EPA]) oversees regional air district activities and regulates air quality at the State level. The BAAQMD has published California Environmental Quality Act (CEQA) Air Quality Guidelines that are used in this assessment to evaluate air quality impacts of projects.[4] The detailed community risk modeling methodology used in this assessment is contained in *Attachment 1*.

Santa Rosa 2035 General Plan

The Santa Rosa 2035 General Plan includes goals, policies, and actions to help Santa Rosa achieve and maintain ambient air quality standards. The following goals, policies, and actions are applicable to the proposed project:

Air Quality

OSC-J Take appropriate actions to help Santa Rosa and the larger Bay Area region achieve and maintain all ambient air quality standards

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

[3] Available online: http://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm. Accessed: November 21, 2014.
[4] Bay Area Air Quality Management District. 2017. *BAAQMD CEQA Air Quality Guidelines*. May.

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 14, 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, elementary schools, and parks. The project would introduce new sensitive receptors. In addition, the closest sensitive receptors to the project site are residences of the mobile home park adjacent to the northern project site boundary.

Significance Thresholds

In June 2010, BAAQMD adopted thresholds of significance to assist in the review of projects under CEQA and these significance thresholds were contained in the District's 2011 *CEQA Air Quality Guidelines*. These thresholds were designed to establish the level at which BAAQMD believed air pollution emissions would cause significant environmental impacts under CEQA. The thresholds were challenged through a series of court challenges and were mostly upheld. BAAQMD updated the *CEQA Air Quality Guidelines* in 2017 to include the latest significance thresholds that were used in this analysis are summarized in Table 1.

Table 1. Air Quality Significance Thresholds

Pollutant	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (lbs./day)	Average Daily Emissions (lbs./day)	Annual Average Emissions (tons/year)
Criteria Air Pollutants			
ROG	54	54	10
NO_x	54	54	10
PM_{10}	82	82	15
$PM_{2.5}$	54	54	10
CO	Not Applicable	9.0 ppm (8-hour average) or 20.0 ppm (1-hour average)	
Fugitive Dust	Construction Dust Ordinance or other Best Management Practices	Not Applicable	
Single-Source Health Risks and Hazards for New Sources or New Receptors			
Excess Cancer Risk	> 10.0 per one million		
Chronic or Acute Hazard Index	> 1.0		
Incremental annual average $PM_{2.5}$	> 0.3 µg/m^3		
Cumulative Health Risks and Hazards for Sensitive Receptors			
Excess Cancer Risk	> 100 per one million		
Chronic Hazard Index	> 10.0		
Annual Average $PM_{2.5}$	> 0.8 µg/m^3		
Odors			
Odor	5 confirmed complaints per year averaged over 3 years		
Greenhouse Gas Emissions			
Land Use Projects – direct and indirect emissions	Compliance with a Qualified GHG Reduction Strategy OR 1,100 metric tons annually or 4.6 metric tons per capita (for 2020) *		

Note: ROG = reactive organic gases, NOx = nitrogen oxides, PM_{10} = course particulate matter or particulates with an aerodynamic diameter of 10 micrometers (µm) or less, $PM_{2.5}$ = fine particulate matter or particulates with an aerodynamic diameter of 2.5µm or less. GHG = greenhouse gases.

*BAAQMD does not have a recommended post-2020 GHG threshold.

Impacts and Mitigation Measures

Impact 1: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable State or federal ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

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

Construction activities, particularly during site preparation and grading, would temporarily generate fugitive dust in the form of PM_{10} and $PM_{2.5}$. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after it dries. The BAAQMD *CEQA Air Quality Guidelines* consider these impacts to be less-than-significant if best management practices are implemented to reduce these emissions. *Mitigation Measure AQ-1 would implement BAAQMD-recommended best management practices*.

The California Emissions Estimator Model (CalEEMod) Version 2016.3.2 was used to estimate emissions from construction and operation of the project assuming full build-out conditions. The project land use types and size, and anticipated construction schedule were input to CalEEMod. The model output from CalEEMod is included as *Attachment 2*.

<u>Construction Period Emissions</u>

CalEEMod provided annual emissions for construction. CalEEMod 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. A construction build-out scenario, including equipment list and schedule, was based CalEEMod defaults with some information (i.e. equipment list and schedule) being modified by the project applicant. The proposed project land uses were input into CalEEMod as follows: 252 dwelling units and 214,167-sf entered as “Apartment Mid Rise”, 3,867-sf entered as “Fast Food Restaurant with Drive Thru”, and 494 spaces entered as “Parking Lot”. Additionally, 17,360-sf of building demolition was entered into the model.

The CalEEMod construction schedule assumed that the project would be built out over a period of approximately 19 months, beginning in January 2019. Based on the provided construction schedule and equipment usage assumptions, there were an estimated 400 construction workdays Average daily emissions were computed for each building by dividing the total construction

emissions by the number of construction days. Table 2 shows average daily construction emissions of ROG, NO_X, PM_{10} exhaust, and $PM_{2.5}$ exhaust during construction of the project. Construction activities, particularly during site preparation and grading, would temporarily generate fugitive dust in the form of PM_{10} and $PM_{2.5}$. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after it dries. The BAAQMD CEQA Air Quality Guidelines consider these impacts to be *less-than-significant* if best management practices are implemented to reduce these emissions. *Mitigation Measure AQ-1 would implement BAAQMD-recommended best management practices*.

Table 2. Construction Period Emissions

Scenario	ROG	NOx	PM_{10} Exhaust	$PM_{2.5}$ Exhaust
Total Construction Emissions (tons)	2.1 tons	4.0 tons	0.2 tons	0.2 tons
Average Daily Emissions (pounds/day)[1]	**10.5 lbs./day**	**20 lbs./day**	**1.0 lbs./day**	**1.0 lbs./day**
BAAQMD Thresholds (pounds per day)	*54* lbs./day	*54* lbs./day	*82* lbs./day	*54* lbs./day
Exceed Threshold?	**No**	**No**	**No**	**No**
Note: Assumes 400 construction workdays				

Mitigation Measure AQ-1: **Include measures to control dust and exhaust during construction.**

During any construction period ground disturbance, the applicant shall ensure that the project contractor implement measures to control dust and exhaust. Implementation of the measures recommended by BAAQMD and listed below would reduce the air quality impacts associated with grading and new construction to a less-than-significant level. Additional measures are identified to reduce construction equipment exhaust emissions. The contractor shall implement the following best management practices that are required of all projects:

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

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

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

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

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

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

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

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

Effectiveness of Mitigation Measure AQ-1

The measures included above would be consistent with BAAQMD-recommended basic control measures for reducing fugitive particulate matter that are contained in the BAAQMD CEQA Air Quality Guidelines.

Operational Period Emissions

Operational air emissions from the project would be generated primarily from autos driven by future residents, employees, and customers. Evaporative emissions from architectural coatings and maintenance products (classified as consumer products) are typical emissions from these types of uses. CalEEMod was also used to estimate emissions from operation of the proposed project assuming full build-out.

Model Year

Emissions associated with vehicle travel depend on the year of analysis because emission control technology requirements are phased-in over time. Therefore, the earlier the year analyzed in the model, the higher the emission rates utilized by CalEEMod. The earliest the project site could possibly be constructed and begin operating would be 2021. Emissions associated with build-out later than 2021 would be lower.

Trip Generation Rates

CalEEMod allows the user to enter specific vehicle trip generation rates, which were input to the model using the daily trip generation rate provided in the project trip generation table. For each land use type, the daily trips forecasted with trip reductions applied was divided by the quantity of that land use to identify the weekday daily trip rate. The Saturday and Sunday trip rates were assumed to be the weekday rate adjusted by multiplying the ratio of the CalEEMod default rates for those days. The traffic analysis provided the project trip generation values for the Multi-Family Housing and the In-N-Out.[5] The weekday trip rate for the Multi-Family Housing was

[5] W-Trans, *Draft Report: Traffic Impact Study for the Yolanda Mixed-Use Project.* 30 October 2018.

5.44, which changed the Saturday trip rate to 5.23 and the Sunday trip rate to 4.79. The In-N-Out weekday trip rate was 772.37, which changed the Saturday trip rate to 1,124.07 and the Sunday trip rate to 844.92. Additionally, there are two other In-N-Out restaurants within the area that are about three miles away from the proposed In-N-Out restaurant. It was assumed that the customers that would visit this proposed In-N-Out would not travel more three miles. Thus, the commercial-customer (C-C) trip length was changed to three miles.

Energy

CalEEMod defaults for energy use were used, which include the 2016 Title 24 Building Standards. Indirect emissions from electricity were computed in CalEEMod. The model has a default rate of 641.3 pounds of CO_2 per megawatt of electricity produced, which is based on PG&E's 2008 emissions rate. The rate was adjusted to account for PG&E's projected 2020 CO_2 intensity rate. This 2020 rate is based, in part, on the requirement of a renewable energy portfolio standard of 33 percent by the year 2020. The derived 2020 rate for PG&E was estimated at 290 pounds of CO_2 per megawatt of electricity delivered.[6] Energy usage associated with new State Title 24 building code requirements that would require more efficient homes and provisions for solar power generation were not included in the emissions calculations. New homes are anticipated to have up to 50-percent lower energy consumption[7].

Idling Vehicles

The CalEEMod model does not account for additional emissions due to vehicle queuing that could occur during certain peak hours at the new drive-thru restaurant. Vehicles were assumed to idle at the drive-thru restaurant. Emissions were computed by adjusting the emissions factors for the mix of idling vehicles (i.e., customer vehicle type), number of vehicles idling, and the time that they would idle. The vehicle mix in CalEEMod was adjusted to reflect the type of vehicles that would use the fueling station. CalEEMod's default vehicle mix is based on the on-road travels for all of Sonoma County, which includes heavy-duty trucks, motor-homes, and buses that would not use the new drive-thru restaurant. The CARB EMFAC2014 model was used to compute the percentages of light-duty and medium-duty vehicles. In addition, Light-Heavy Duty trucks were included in this vehicle mix.

These emissions were computed using the CARB's EMFAC2014 motor vehicle emission factor model. Idle emissions were computed using the methods recommended by CARB for light-duty vehicles that convert five mile-per hour emissions rates into hourly emissions.[8] This analysis assumed the peak-hour would have 15 vehicles queuing constantly during the peak hour. This was based on the traffic analysis that assumed the In-N-Out would have a projected 87 inbound trips during the p.m. peak hour with two-thirds of that traffic being for the drive-through queue[9]. This equates to about 15 vehicles every 15 minutes and about one minute to serve each vehicle.

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[6] Pacific Gas & Electric, 2015. *Greenhouse Gas Emission Factors: Guidance for PG&E Customers*. November.
[7] CEC 2018. See https://www.energy.ca.gov/title24/2019standards/documents/2018_Title_24_2019_Building_Standards_FAQ.pdf, accessed 10/19/2018
[8] See *http://www.arb.ca.gov/msei/modeling.htm* - accessed on April 15, 2014
[9] W-Trans, *Draft Report: Traffic Impact Study for the Yolanda Mixed-Use Project.* 30 October 2018.

All vehicles were assumed to be light-duty or medium-duty vehicles. Since there were no predictions for daily conditions, this was assumed to represent 10 percent of the daily queuing emissions. Traffic studies typically assume that peak hour is approximately 10 percent of the daily volume; therefore, this relationship was used for this analysis. Annual emissions assumed similar operating conditions 365 days per year. The analysis of queuing emissions is provided in *Attachment 3.*

Other Inputs

Default model assumptions for emissions associated with solid waste generation and water/wastewater use were applied to the project. Water/wastewater use were changed to 100% aerobic conditions to represent wastewater treatment plant conditions. All hearths were assumed to be gas-powered.

Existing Uses

The existing land use on the project site included 17,360-sf entered as "General Light Industry" on a 10.4-acre site.

Project Operational Emissions

As shown in Table 3, operational emissions would not exceed the BAAQMD significance thresholds. This would be considered a *less-than-significant* impact.

Table 3. Operational Period Emissions

Scenario	ROG	NOx	PM_{10}	$PM_{2.5}$
2021 Project Operational Emissions (tons/year)	2.4 tons	6.0 tons	2.4 tons	0.7 tons
2021 Drive-Thru Restaurant Car Idling Operational Emissions (tons/year)	0.2 tons	0.1 tons	<0.1 tons	<0.1 tons
2021 Existing Operational Emissions (tons/year)	0.1 tons	0.2 tons	0.1 tons	0.03 tons
Net Annual Emissions	**2.5 tons**	**5.9 tons**	**<2.4 tons**	**<0.77 tons**
BAAQMD Thresholds (tons /year)	*10 tons*	*10 tons*	*15 tons*	*10 tons*
Exceed Threshold?	***No***	***No***	***No***	***No***
2021 Project Operational Emissions (*lbs/day*)[1]	13.7 lbs.	32.3 lbs.	13.2 lbs.	4.2 lbs.
BAAQMD Thresholds (pounds/day)	*54 lbs.*	*54 lbs.*	*82 lbs.*	*54 lbs.*
Exceed Threshold?	***No***	***No***	***No***	***No***
Notes: [1] Assumes 365-day operation.				

Impact 2: Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

As discussed under Impact 1, the project would have emissions less than the BAAQMD thresholds. Therefore, the project would not contribute substantially to existing or projected

violations of those standards. Carbon monoxide emissions from traffic generated by the project would be the pollutant of greatest concern at the local level. Congested intersections with a large volume of traffic have the greatest potential to cause high-localized concentrations of carbon monoxide. Air pollutant monitoring data indicate that carbon monoxide levels have been at healthy levels (i.e., below State and federal standards) in the Bay Area since the early 1990s. As a result, the region has been designated as attainment for the standard. The highest measured level over any 8-hour averaging period during the last 3 years in the Bay Area is less than 3.0 parts per million (ppm), compared to the ambient air quality standard of 9.0 ppm. Intersections affected by the project would have traffic volumes less than the BAAQMD screening criteria and, thus, would not cause a violation of an ambient air quality standard or have a considerable contribution to cumulative violations of these standards.[10] The project would not cause the violation of an air quality standard or worsen an existing violation of an air quality standard. This would be a *less-than-significant* impact.

Impact 3: Expose sensitive receptors to substantial pollutant concentrations?

Project impacts related to increased community risk can occur either by introducing a new sensitive receptor, such as a residential use, in proximity to an existing source of TACs or by introducing a new source of TACs with the potential to adversely affect existing sensitive receptors in the project vicinity. The project would introduce new residents that are sensitive receptors. In addition, temporary project construction activity would generate dust and equipment exhaust on a temporary basis that could affect nearby sensitive receptors. Community risk impacts are addressed by increased predicting lifetime cancer risk, the increase in annual $PM_{2.5}$ concentrations, and computing the Hazard Index (HI) for non-cancer health risks. The methodology for computing community risks impacts is contained in *Attachment 1*.

Operational Community Health Risk Impacts

Community health risk assessments typically look at all substantial sources of TACs that can affect sensitive receptors that are located within 1,000 feet of a project site. These sources can include freeways or highways, busy surface streets, and stationary sources identified by BAAQMD. Traffic on high volume roadways is a source of TAC emissions that may adversely affect sensitive receptors in close proximity to the roadway. A review of the project area indicates that traffic on Santa Rosa Avenue, Yolanda Avenue, and Kawana Springs Road would exceed 10,000 vehicles per day and are sources of TACs. Other nearby streets are assumed to have less than 10,000 vehicles per day. A review of BAAQMD's stationary source Google Earth map tool identified six sources with the potential to affect the project site. Figure 1 shows the sources affecting the project site. Details of the modeling and community risk calculations are included in *Attachment 3*.

[10] For a land-use project type, the BAAQMD CEQA Air Quality Guidelines state that a proposed project would result in a less-than-significant impact to localized carbon monoxide concentrations if the project would not increase traffic at affected intersections with more than 44,000 vehicles per hour.

Figure 1. Project Site and Nearby TAC and $PM_{2.5}$ Sources

Local Roadways – Santa Rosa Avenue, Yolanda Avenue, Kawana Springs Road

For local roadways, BAAQMD has provided the *Roadway Screening Analysis Calculator* to assess whether roadways with traffic volumes of over 10,000 vehicles per day may have a potentially significant effect on a proposed project. Two adjustments were made to the cancer risk predictions made by this calculator: (1) adjustment for latest vehicle emissions rates predicted using EMFAC2014 and (2) adjustment of cancer risk to reflect new Office of Environmental Health Hazard Assessment (OEHHA) guidance (see *Attachment 1*).

The calculator uses EMFAC2011 emission rates for the year 2014. Overall, emission rates have decreased. The project would be occupied beyond 2018. In addition, a new version of the emissions factor model, EMFAC2014 is available. This version predicts lower emission rates. An adjustment factor of 0.5 was developed by comparing emission rates of total organic gases (TOG) for running exhaust and running losses developed using EMFAC2011 for year 2014 and those from EMFAC2014 for 2018.

The predicted cancer risk was then adjusted using a factor of 1.3744 to account for new OEHHA guidance. This factor was provided by BAAQMD for use with their CEQA screening tools that are used to predict cancer risk.

The three following roadways were identified as having over 10,000 vehicles per day: Santa Rosa Avenue, Yolanda Avenue, Kawana Springs Road. The average daily traffic (ADT) on Santa Rosa Avenue was estimated to be 32,045 vehicles, the ADT on Yolanda Avenue was estimated to be 15,930 vehicles, and the ADT on Kawana Springs Road was estimated to be 13,365 vehicles. This estimate was based on the peak-hour traffic volumes included in the project's traffic analysis for background plus project conditions.[11] The AM and PM peak-hour volumes were averaged and then multiplied by 10 to estimate the ADT.

The BAAQMD *Roadway Screening Analysis Calculator* for Sonoma County was used for these roadways. Santa Rosa Avenue was identified as a north-south directional roadway with the project sensitive receptors east of the roadway. Yolanda Avenue and Kawana Springs Road were identified as east-west directional roadways with the project sensitive receptors north and south of the roadways, respectively. Estimated risk values for both roadways are listed in Table 4. Note that BAAQMD has found that non-cancer hazards from all local roadways would be well below the BAAQMD thresholds. Chronic or acute HI for the roadway would be below 0.03.

Stationary Sources

Permitted stationary sources of air pollution near the project site were identified using BAAQMD's *Stationary Source Risk & Hazard Analysis Tool*. This mapping tool uses Google Earth and identified the location of four stationary sources and their estimated risk and hazard impacts. A Stationary Source Information Form (SSIF) containing the identified sources was prepared and submitted to BAAQMD. They provided updated risk levels, emissions and adjustments to account for new OEHHA guidance.[12] The risk values were then adjusted with the appropriate distance multiplier values provided by BAAQMD or the emissions information was used in refined modeling.

Seven stationary sources were identified (Plant #111902, #7658, #23123, #111340, #18271, #15978, #13085) but the District noted that Plant #13085 was shut down. Also Plant #23123 is a gasoline tank and could not be adjusted for distance or further screened. For the remaining five plants (#15978, #11340, #18271, #7658, #111902), they were either adjusted for distance or refined modeling was used.

Plant #15978

For Plant #15978, the District provided daily emissions files for the year 2018. The BAAQMD *Risk and Hazards Emissions Screening Calculator (Beta Version)* was used with these emissions. However, this plant, which is not a metal coating operation, did not have any risk levels based on the emission file and the *Beta Calculator*.

[11] W-Trans, *Draft Report: Traffic Impact Study for the Yolanda Mixed-Use Project.* 30 October 2018.
[12] Correspondence with Areana Flores, BAAQMD, 9 August 2018.

Plants #111340 and #18271

For Plants #111340 and Plant #18271, the risk levels for these stationary sources were adjusted for distance based on BAAQMD's *Distance Adjustment Multiplier Tool for Gasoline Dispensing Facilities* and *Distance Adjustment Multiplier Tool for Diesel Internal Combustion Engines*, respectively.

Plant #11902

For Plant #11902, emissions from this gas station were screened using a screening gas station analysis. The emissions from this gas station were computed based on an assumed projected annual throughput of gasoline (i.e., 5 million gallons – typical for a high-volume gas station of this size). Emissions of benzene, toluene, and xylenes which are TACs were computed based on the most recent emission factors developed by CARB.[13] The emission factors are based on annual 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 benzene, toluene, and xylene which are TACs were computed assuming that benzene, toluene, and xylene make up 0.3%, 8.0%, and 2.4% of gasoline vapor, respectively.[14]

The average daily emissions of each TAC were input to the BAAQMD's *Risk and Hazards Screening Calculator* to compute project risk impacts in terms of lifetime cancer risk and non-cancer hazards. The calculator predicts the near source risk levels, and after adjustments to account for new OEHHA guidance, is then entered into BAAQMD's *Gasoline Station Distance Multiplier Tool*. The cancer risk at the project sensitive receptor (250 feet away) would be 1.86 in a million. The non-cancer risk (HI) due to the emissions from the gasoline dispensing facility would almost be less than 0.01. Gas station #11902 emissions calculations are included in *Attachment 3* and shown in Table 4. The cancer risks and HI concentrations associated with this gas station would be lower than the BAAQMD significance thresholds of greater than 10.0 in one million and 1.0.

Plant #7658

The Chapel of the Chimes operates two cremation retorts, which emit a number of TACs from the retort exhaust stacks. The exhaust stacks are about 200 feet east of the project site boundary and about 615 feet east of the proposed residential area of the project. Potential future health impacts to new project residents were evaluated using air quality dispersion modeling to calculate TAC concentrations in the project's residential areas and BAAQMD-recommended

[13] CARB. 2013. *Revised Emissions Factors for Gasoline Marketing Operations at California Gasoline Dispensing Facilities*. December 23, 2013.
[14] CAPCOA. 1997. *Air Toxics "Hot Spots" Program, Gasoline Service Station Industrywide Risk Assessment Guidelines*, November 1997

methods for calculating health impacts (cancer risks and chronic and acute non-cancer health effects), as described in Attachment 1.

The U.S. EPA AERMOD dispersion model was used to model TAC and $PM_{2.5}$ emissions from the retorts and predict their concentrations at receptor locations in the new residential project area. The AERMOD dispersion model is a BAAQMD-recommended model for use in modeling analysis of these types of emission sources for CEQA projects.[15] The retort exhaust stacks were modeled as two-point sources with stack heights of 23 feet, 20-inch stack diameters, stack gas exhaust temperatures of 1,100 degrees Fahrenheit, and a stack exit velocity of 5 meters per second. The potential effects of building downwash from the building housing the retorts and other nearby buildings affecting the retort exhaust plumes were accounted for in the modeling. The modeling used a 5-year meteorological data set (2009-2013) from the Sonoma County Airport prepared for use with the AERMOD model by CARB.

TAC and $PM_{2.5}$ emissions used for the modeling were based on emission inventory data for the Chapel of the Chimes retorts provided by the BAAQMD. Emissions were assumed to occur during any hour of the day. One- and eight-hour average concentrations were calculated for TACs with acute 1-hour and 8-hour chronic non-cancer health effects. Long-term average concentrations (2009-2013 period average) were calculated for TACs with chronic non-cancer health effects, $PM_{2.5}$ concentrations, and for calculating TAC cancer risks. Concentrations were calculated at receptor heights of 1.5 meters (4.9 feet), 4.7 meters (15.4 feet), and 7.9 meters (25.9 feet), representative of the breathing heights of residents on the first, second, and third floor levels, respectively.

The maximum TAC and $PM_{2.5}$ concentrations occurred at third floor residential receptors in the residential area closest to Santa Rosa Avenue. Based on the maximum 1-hour, 8-hour, and average concentrations the maximum non-cancer acute and chronic health effects and increased cancer risks were calculated using the maximum-modeled concentrations and BAAQMD-recommended methods for calculating health impacts. The maximum health impacts are summarized in Table 4. Details of the emission calculations, modeling information, and health risk calculations are provided in Attachment 3.

Concentration levels and community risk impacts from all the stationary sources discussed above and their impact upon the project site are reported in Table 4.

Cumulative Community Health Risk at Project Site

Community risk impacts from combined sources upon the project site are reported in Table 4. As shown, the annual cancer risks, annual $PM_{2.5}$ concentrations, and Hazard Indexes are all below their respective single-source and cumulative significance thresholds and would be considered a *less-than significant* impact.

[15] Bay Area Air Quality Management District (BAAQMD), 2012, *Recommended Methods for Screening and Modeling Local Risks and Hazards, Version 3.0.* May.

Table 4. Impacts from Combined TAC Sources at Project Site

Source	Maximum Cancer Risk (per million)	Maximum Annual $PM_{2.5}$ ($\mu g/m^3$)	Maximum Hazard Index
Santa Rosa Avenue (north-south) at 450 feet east ADT 32,045	2.9	0.10	<0.03
Yolanda Avenue (east-west) at 50 feet north ADT 15,930	6.4	0.25	<0.03
Kawana Springs (east-west) at 700 feet south ADT 13,365	0.5	0.02	<0.03
Plant #111902 (Gas Dispensing Facility) at 250 feet	1.9	-	0.01
Plant #7658 (Crematory) at 615 feet	<0.1	-	0.01
Plant #23123 (Gasoline Tank)	1.6	-	0.01
Plant #111340 (Gas Dispensing Facility) at 320 feet	2.5	-	0.01
Plant #18271(Generator) at 400 feet	0.5	<0.01	<0.01
BAAQMD Single-Source Threshold	***>10.0***	***>0.3***	***>1.0***
Significant?	*No*	*No*	*No*
Cumulative Total	16.4	0.38	0.14
BAAQMD Cumulative Source Threshold	***>100***	***>0.8***	***>10.0***
Significant?	*No*	*No*	*No*

Construction Community Health Risk Impacts

Project Construction Activity

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 impact issues associated with construction emissions are cancer risk and exposure to $PM_{2.5}$. Diesel exhaust 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 $PM_{2.5}$.[16] This assessment included dispersion modeling to predict the off-site concentrations resulting from project construction, so that lifetime cancer risks and non-cancer health effects could be evaluated.

Construction Emissions

The CalEEMod model provided total annual PM_{10} exhaust emissions (assumed to be DPM) for the off-road construction equipment and for exhaust emissions from on-road vehicles, with total emissions from all construction stages as 0.1590 tons (318 pounds). The on-road emissions are a result of haul truck travel during demolition and grading activities, worker travel, and vendor deliveries during construction. A trip length of one mile was used to represent vehicle travel while at or near the construction site. It was assumed that these emissions from on-road vehicles

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

traveling at or near the site would occur at the construction site. Fugitive $PM_{2.5}$ dust emissions were calculated by CalEEMod as 0.0822 tons (164 pounds) for the overall construction period.

Dispersion Modeling

The U.S. EPA AERMOD dispersion model was used to predict concentrations of DPM and $PM_{2.5}$ concentrations at sensitive receptors (residences) in the vicinity of the project construction area. The AERMOD dispersion model is a BAAQMD-recommended model for use in modeling analysis of these types of emission activities for CEQA projects.[17] The modeling utilized two area sources to represent the on-site construction emissions, one for exhaust emissions and one for fugitive dust emissions. To represent the construction equipment exhaust emissions, an emission release height of 6 meters (19.7 feet) was used for the area source. The elevated source height reflects the height of the equipment exhaust pipes plus an additional distance for the height of the exhaust plume above the exhaust pipes to account for plume rise of the exhaust gases. For modeling fugitive $PM_{2.5}$ emissions, a near-ground level release height of 2 meters (6.6 feet) was used for the area source. Emissions from the construction equipment and on-road vehicle travel were distributed throughout the modeled area sources. Construction emissions were modeled as occurring daily between 7 a.m. to 4 p.m., when the majority of construction activity would occur.

The modeling used a 5-year meteorological data set (2009-2013) from the Sonoma County Airport prepared for use with the AERMOD model by the California Air Resource Board. Annual DPM and $PM_{2.5}$ concentrations from construction activities at each project site during the 2019-2020 period were calculated using the model. DPM and $PM_{2.5}$ concentrations were calculated at nearby sensitive receptor locations. Receptor heights of 1.5 meters (4.9 feet) and 4.5 meters (14.7 feet) were used to represent the breathing height of nearby residences in nearby apartments and single-family homes.

The maximum-modeled annual DPM and $PM_{2.5}$ concentrations, which includes both the DPM and fugitive $PM_{2.5}$ concentrations from construction activities, were identified at nearby offsite sensitive receptors. Using the maximum annual modeled DPM concentration, the maximum increased cancer risk at the location of the maximally exposed individual (MEI) was calculated using BAAQMD recommended methods. The cancer risk calculations are based on applying the BAAQMD recommended age sensitivity factors to the TAC concentrations. Age-sensitivity factors reflect the greater sensitivity of infants and small children to cancer causing TACs. BAAQMD-recommended exposure parameters were used for the cancer risk calculations, as described in *Attachment 1*. Infant and adult exposures were assumed to occur at all residences through the entire construction period. Non-cancer health hazards and maximum $PM_{2.5}$ concentrations were also calculated and identified.

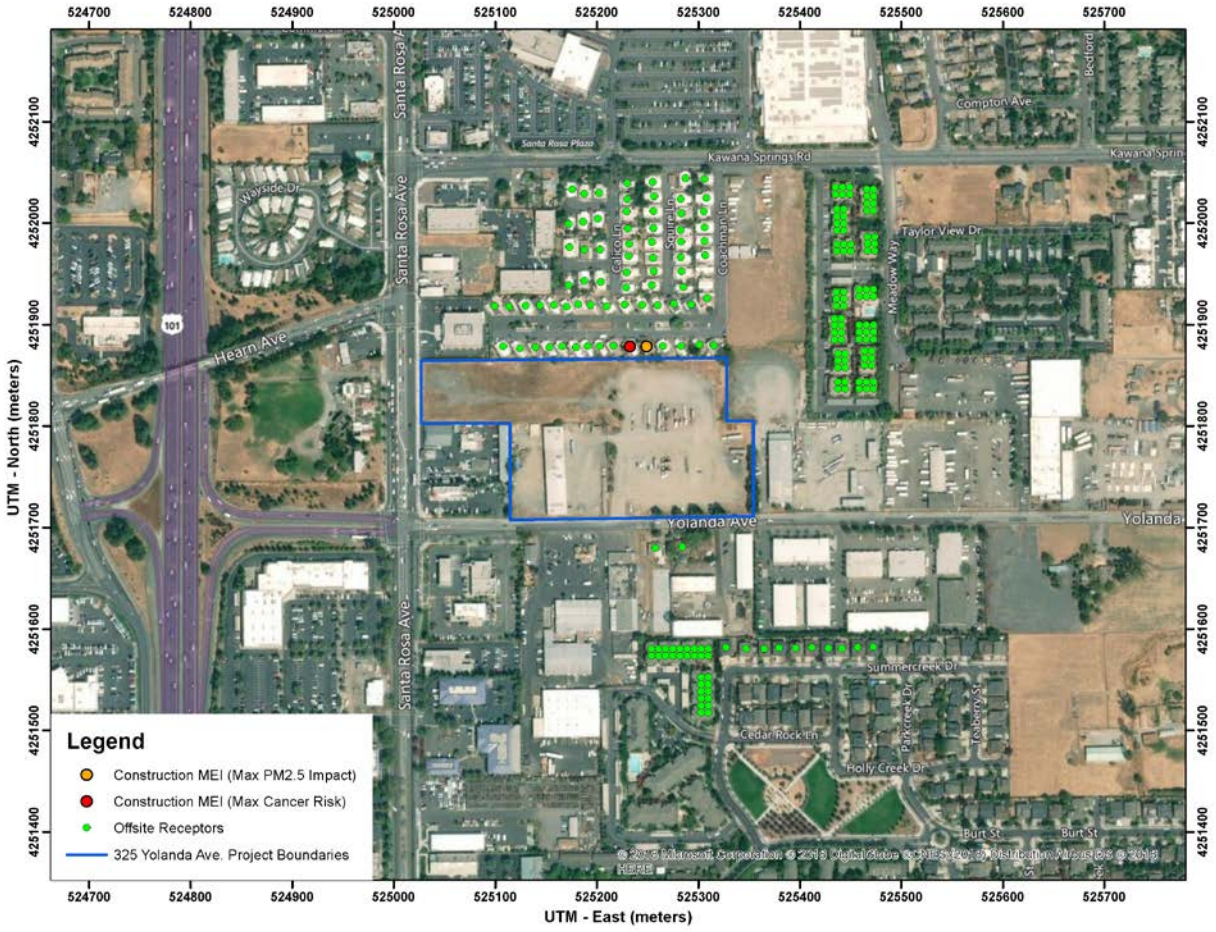
Results of this assessment indicated that the maximum excess residential cancer risks would be greater than the BAAQMD significance threshold of 10 in one million and the maximum $PM_{2.5}$ concentrations would exceed the BAAQMD significance threshold of 0.3 $\mu g/m^3$. Figure 2 shows the locations where the maximum-modeled DPM and $PM_{2.5}$ concentrations occurred. The

[17] Bay Area Air Quality Management District (BAAQMD), 2012, *Recommended Methods for Screening and Modeling Local Risks and Hazards, Version 3.0.* May.

maximum cancer risk and $PM_{2.5}$ impact occurred at mobile home residences north of the project site.

Table 5 summarizes the maximum cancer risks, $PM_{2.5}$ concentrations, and health hazard indexes for project related construction activities affecting the residential MEI. *Attachment 4* to this report includes the emission calculations used for the construction area source modeling and the cancer risk calculations.

Figure 2. Project Construction Sites, Locations of Off-Site Sensitive Receptors, and Locations of Maximum Cancer Risk and $PM_{2.5}$ Impacts



Cumulative Community Health Risk at Construction MEI

Cumulative TAC impacts are assessed by predicting the combined community risk impacts to the project and nearby sources. Table 5 reports both the project and cumulative community risk impacts. The project would have a *significant* impact with respect to community risk caused by project construction activities, since the maximum cancer risk is above the single-source thresholds of 10.0 per million for cancer risk. As shown in Table 5, the combined cancer risk, PM2.5 concentrations and Hazard risk values, which includes unmitigated and mitigated, would

not exceed the cumulative thresholds. *Mitigation Measures AQ-2 would reduce these impacts to a level of less than significant.*

Table 5. Impacts from Combined Sources at Construction MEI

Source	Maximum Cancer Risk (per million)	Maximum Annual $PM_{2.5}$ ($\mu g/m^3$)	Maximum Hazard Index
Project Construction			
Unmitigated	**42.7** (Infant)	**0.41**	0.04
Mitigated	5.1 (Infant)	0.08	<0.01
BAAQMD Single-Source Threshold	***>10.0***	***>0.3***	***>1.0***
Significant?			
Unmitigated	***Yes***	***Yes***	*No*
Mitigated	*No*	*No*	*No*
Cumulative Sources			
Santa Rosa Avenue (north-south) at 730 feet east ADT 32,045	1.9	0.07	<0.03
Yolanda Avenue (east-west) at 570 feet north ADT 15,930	1.5	0.06	<0.03
Kawana Springs (east-west) at 580 feet south ADT 13,365	0.6	0.02	<0.03
Plant #111902 (Gas Dispensing Facility) at 780 feet	0.3	-	<0.01
Plant #7658 (Crematory) at 940 feet	0.01	<0.01	<0.01
Plant #23123 (Gasoline Tank)	1.6	-	0.01
Plant #111340 (Gas Dispensing Facility) at 800 feet	0.6	-	0.07
Plant #18271(Generator) at 480 feet	0.4	<0.01	<0.01
Cumulative Total			
Unmitigated	49.6	0.58	0.23
Mitigated	12.0	0.25	0.20
BAAQMD Cumulative Source Threshold	***>100***	***>0.8***	***>10.0***
Significant?			
Unmitigated	*No*	*No*	*No*
Mitigated	*No*	*No*	*No*

Mitigation Measure AQ-2: **Selection of equipment during construction to minimize emissions. Such equipment selection would include the following:**

The project shall develop a plan demonstrating that the off-road equipment used on-site to construct the project would achieve a fleet-wide average 77-percent reduction in DPM exhaust emissions or greater. One feasible plan to achieve this reduction would include the following:

- All diesel-powered off-road equipment, larger than 25 horsepower, operating on the site for more than two days continuously shall, at a minimum, meet U.S. EPA particulate matter emissions standards for Tier 2 engines that include CARB-certified Level 3 Diesel Particulate Filters[18] or equivalent. Equipment that meets U.S. EPA Tier 4 engine standards for particulate matter or Tier 3 engines with CARB-certified Level 3 Diesel Particulate Filter would meet this requirement.

[18] See http://www.arb.ca.gov/diesel/verdev/vt/cvt.htm

Effectiveness of Mitigation Measure AQ-2

CalEEMod was used to predict the emissions assuming the minimum mitigation requirements that would utilize U.S. EPA Tier 2 engines with CARB-certified Level 3 Diesel Particulate Filters The computed maximum increased lifetime residential cancer risk from construction, assuming infant exposure, would be 5.1 in one million or less and the maximum annual $PM_{2.5}$ concentration would 0.08 $\mu g/m^3$ or less with implementation of Mitigation Measure AQ-2. As a result, impacts would be reduced to *less than significant* with respect to community risk caused by construction activities.

Impact 5: Create objectionable odors affecting a substantial number of people?

The project site is located next to a McDonald's fast-food restaurant and an In-N-Out will be introduced to the area. Restaurants, especially fast-food restaurants, can produce noticeable odors through the preparation of food. Char broilers and deep fryers tend to produce odors that can be offensive to some people and generate complaints. There are a number of measures that restaurants can incorporate into the exhaust systems to eliminate or reduce odors so that complaints do not occur. BAAQMD's Regulation 7: Odiferous Substances generally apply to restaurants. This regulation prohibits discharge of any odorous substance that causes the ambient air at or beyond the property line to be odorous and to remain odorous after dilution with four parts of odor-free air.

Odor impacts could occur if residents associated with the project experienced objectionable odors and made complaints. Due to the subjective nature of odor impacts, the number of variables that can influence the potential for an odor impact, and the variety of odor sources, there are no quantitative methodologies to determine the presence of a significant odor impact. The significance of odor impacts is based on the potential to cause odor complaints.

The project would locate new receptors (residences) about 200-800 feet east of the proposed restaurant kitchen exhaust vents. The closest existing resident to the proposed restaurant is about 90 feet northeast.

BAAQMD was contacted to identify any odor complaint history associated with this restaurant. The District has not received any odor complaints associated with this restaurant. Winds in the area generally blow from the south-southeast (based on wind data from Santa Rosa Airport) and the project is located to the east. It's assumed then that the project would not create objectional odors that would not affect the existing or proposed receptors.

The In-N-Out restaurant would be a new source of odors located approximately 100 to 200 feet southwest of existing residences. In-N-Out restaurants have not had a history of causing odor complaints in the Bay Area, as indicated in a complaint history inquiry to BAAQMD. However, odors can be associated with fast-food restaurants in close proximity to residences. These odors can be effectively controlled with the installation of proper control units in the exhaust systems of these restaurants. An analysis of the odor treatments for a new In-N-Out restaurant would be further conducted when the City moves that project forward.

Greenhouse Gas Emissions

Setting

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

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

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

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

Recent Regulatory Actions

Assembly Bill 32 (AB 32), California Global Warming Solutions Act (2006)

AB 32, the Global Warming Solutions Act of 2006, codified the State's GHG emissions target by directing CARB to reduce the State's global warming emissions to 1990 levels by 2020. AB 32 was signed and passed into law by Governor Schwarzenegger on September 27, 2006. Since that time, the CARB, CEC, California Public Utilities Commission (CPUC), and Building

Standards Commission have all been developing regulations that will help meet the goals of AB 32 and Executive Order S-3-05.

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

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

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

SB 350 Renewable Portfolio Standards

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

Executive Order EO-B-30-15 (2015) and SB 32 GHG Reduction Targets

In April 2015, Governor Brown signed Executive Order which extended the goals of AB 32, setting a greenhouse gas emissions target at 40 percent of 1990 levels by 2030. On September 8, 2016, Governor Brown signed SB 32, which legislatively established the GHG reduction target of 40 percent of 1990 levels by 2030. In November 2017, CARB issued *California's 2017 Climate Change Scoping Plan*. While the State is on track to exceed the AB 32 scoping plan 2020 targets, this plan is an update to reflect the enacted SB 32 reduction target.

The new Scoping Plan establishes a strategy that will reduce GHG emissions in California to meet the 2030 target (note that the AB 32 Scoping Plan only addressed 2020 targets and a long-

term goal). Key features of this plan are:

- Cap and Trade program places a firm limit on 80 percent of the State's emissions;
- Achieving a 50-percent Renewable Portfolio Standard by 2030 (currently at about 29 percent statewide);
- Increase energy efficiency in existing buildings (note that new
- Develop fuels with an 18-percent reduction in carbon intensity;
- Develop more high-density, transit oriented housing;
- Develop walkable and bikable communities
- Greatly increase the number of electric vehicles on the road and reduce oil demand in half;
- Increase zero-emissions transit so that 100 percent of new buses are zero emissions;
- Reduce freight-related emissions by transitioning to zero emissions where feasible and near-zero emissions with renewable fuels everywhere else; and
- Reduce "super pollutants" by reducing methane and hydrofluorocarbons or HFCs by 40 percent.

In the updated Scoping Plan, CARB recommends statewide targets of no more than 6 metric tons CO_2e per capita (statewide) by 2030 and no more than 2 metric tons CO_2e per capita by 2050. The statewide per capita targets account for all emissions sectors in the State, statewide population forecasts, and the statewide reductions necessary to achieve the 2030 statewide target under SB 32 and the longer-term State emissions reduction goal of 80 percent below 1990 levels by 2050.

Regulatory Agency

Santa Rosa 2035 General Plan: Greenhouse Gas Appendix

The following greenhouse gas emission reduction goals and policies from the Santa Rosa General Plan 2035 are applicable to the proposed project.

Land Use and Livability

LUL-G-1 Develop the following areas as mixed-use centers (see General Plan Land Use diagram): South of Hearn Avenue, at Dutton Meadow Avenue, West of Corporate Center Parkway, at Northpoint Parkway, Piner Road at Marlow Road, and Petaluma Hill Road, at Yolanda Avenue.

Open Space and Conservation

OSC-J Take appropriate actions to help Santa Rosa and the larger Bay Area region achieve and maintain all ambient air quality standards

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.

OSC-M Reduce Greenhouse Gas Emissions

OSC-M-1 Meet local, regional, and state targets for reduction of greenhouse gas emissions through implementation of the Climate Action Plan

Significance Thresholds

The BAAQMD's CEQA Air Quality Guidelines do not use quantified thresholds for projects that are in a jurisdiction with a qualified GHG reductions plan (i.e., a Climate Action Plan). The plan has to address emissions associated with the period that the project would operate (e.g., beyond year 2020). For quantified emissions, the guidelines recommended a GHG threshold of 1,100 metric tons or 4.6 metric tons (MT) per capita. These thresholds were developed based on meeting the 2020 GHG targets set in the scoping plan that addressed AB 32. Development of the project would occur beyond 2020, so a threshold that addresses a future target is appropriate.

Although BAAQMD has not published a quantified threshold for 2030 yet, this assessment uses a "Substantial Progress" efficiency metric of 2.6 MT CO_2e/year/service population and a bright-line threshold of 660 MT CO_{2e}/year based on the GHG reduction goals of EO B-30-15. The service population metric of 2.6 is calculated for 2030 based on the 1990 inventory and the projected 2030 statewide population and employment levels[19]. The 2030 bright-line threshold is a 40 percent reduction of the 2020 1,100 MT CO_{2e}/year threshold.

Additionally, the City of Santa Rosa has a Climate Action Plan (CAP) that outlines and address GHG reduction targets for the city. It is a recognized Qualified GHG Reduction Strategy. This assessment uses the City of Santa Rosa's efficiency metric of 2.3 MT CO_{2e}/year/service population for the year 2035 as stated within the City's CAP.

Impact 4: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

GHG emissions associated with development of the proposed project would occur over the short-term from construction activities, consisting primarily of emissions from equipment exhaust and worker and vendor trips. There would also be long-term operational emissions associated with vehicular traffic within the project vicinity, energy and water usage, and solid waste disposal. Emissions for the proposed project are discussed below and were analyzed using the methodology recommended in the BAAQMD CEQA Air Quality Guidelines.

CalEEMod Modeling

CalEEMod was used to predict GHG emissions from operation of the site assuming full build-out of the project. The project land use types and size and other project-specific information were

[19] Association of Environmental Professionals, 2016. *Beyond 2020 and Newhall: A Field Guide to New CEQA Greenhouse Gas Thresholds and Climate Action Plan Targets for California*. April.

input to the model, as described above within the operational period emissions. CalEEMod output is included in *Attachment 2*.

Service Population Emissions

The project service population efficiency rate is based on the number of future residents and future employees. For this project, the number of future residents was estimated by multiplying the total number of residential units by the persons per household rate for Santa Rosa found in the California Department of Finance Population and Housing Estimate report.[20] Using the 2.68 persons per household 2018 estimate for Santa Rosa, the number of future residents is estimated to be 675. The number of future employees is estimated to be 36 based on the traffic consultant's analysis. The total future population is 711 residents and employees.

Construction Emissions

GHG emissions associated with construction were computed to be 844 MT of CO_2e for the total construction period. These are the emissions from on-site operation of construction equipment, vendor and hauling truck trips, and worker trips. Neither the City nor BAAQMD have an adopted threshold of significance for construction-related GHG emissions, though BAAQMD recommends quantifying emissions and disclosing that GHG emissions would occur during construction. BAAQMD also encourages the incorporation of best management practices to reduce GHG emissions during construction where feasible and applicable. Best management practices assumed to be incorporated into construction of the proposed project include but are not limited to: using local building materials of at least 10 percent and recycling or reusing at least 50 percent of construction waste or demolition materials.

Operational Emissions

The CalEEMod model, along with the project vehicle trip generation rates, was used to estimate daily emissions associated with operation of the fully-developed site under the proposed project. As shown in Table 6, annual net emissions resulting from operation of the proposed project are predicted to be 2,256 MT of CO_2e for the year 2021, 2,256 MT of CO_2e for the year 2030, and 2,139 MT of CO_2e for the year 2035. The Service Population Emissions are predicted to be 4.2, 3.4, and 3.2 MT CO_2e/year/service population for the years 2021, 2030, and 2035, respectively.

To be considered significant, the project must exceed both the GHG significance threshold in metric tons per year and the service population significance threshold. This project does exceed both 2030 thresholds and the project's 2035 service population emissions also exceed the City of Santa Rosa's 2035 efficiency metric. Therefore, the project would have a have *significant* impacts regarding GHG emissions.

However, note that the project is now separated into two distinct components for the proposed restaurant and multi-family residential housing. A subsequent memo to be prepared by Illingworth & Rodkin, Inc. will analyze the construction and operational impacts from each

[20] State of California, Department of Finance, *E-5 Population and Housing Estimates for Cities, Counties and the State — January 1, 2011-2018*. Sacramento, California, May 2018.

project. GHG emissions from the residential portion of the project would not exceed the 2030 or 2035 service population efficiency metric GHG significance thresholds.[21] Therefore, the residential project alone would have a *less-than-significant* GHG impact. The proposed In-N-Out restaurant would need to be re-analyzed to evaluate construction and operational impacts. Refer to the memorandum for residential modeling and analysis details.

Table 6. Annual Project GHG Emissions (CO_2e) in Metric Tons

Source Category	Existing in 2021	Proposed Project in 2021	Proposed Project in 2030	Proposed Project in 2035
Area	<1	18	18	18
Energy Consumption	44	324	324	324
Mobile	114	2,220	1,760	1,659
Mobile (idling)	-	265	219	203
Solid Waste Generation	10	81	81	81
Water Usage	5	28	28	28
Total	174	2,935	2,430	2,313
Net Emissions		**2,761**	**2,256**	**2,139**
Significance Threshold			***660 MT CO_{2e}/yr***	
Service Population Emissions (MT CO_{2e}/year/service population)		4.2	3.4	3.2
Significance Threshold			***2.6 in 2030***	***2.3 in 2035****
Significant (Exceeds both thresholds)?			***Yes***	***Yes***

***City of Santa Rosa CAP 2035 service population emissions efficiency target

Supporting Documentation

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

Attachment 2 includes the CalEEMod output for project construction TAC emissions. Also included are any modeling assumptions.

Attachment 3 includes the screening community risk calculations from sources affecting the construction MEI and the queuing calculations.

Attachment 4 is the construction health risk assessment. AERMOD dispersion modeling files for this assessment, which are quite voluminous, are available upon request and would be provided in digital format.

[21] Illingworth & Rodkin, Inc., "Memorandum: Air Quality Impacts from Residences at 325 Yolanda Avenue". *325 Yolanda Residential Air Quality Assessment – Santa Rosa, CA*. 8 January 2019.

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.[22] 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.[23] This HRA used the recent 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.[24] 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 are 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 of exposure, and the exposure duration. 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). As recommended by the BAAQMD, 95th percentile breathing rates are used for the third trimester and infant exposures, and 80th percentile breathing rates for child and adult exposures. Additionally, CARB and the BAAQMD recommend the use of a residential exposure duration of 30 years for sources with long-term emissions (e.g., roadways).

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 that would have a cancer risk of one in a million or greater assuming 100 percent exposure (FAH = 1.0).

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[22] 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.

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

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

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)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

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

Parameter	*Exposure Type* →	Infant		Child		Adult
	Age Range →	3rd Trimester	0<2	2 < 9	2 < 16	16 - 30
DPM Cancer Potency Factor $(mg/kg\text{-}day)^{-1}$		1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
Daily Breathing Rate (L/kg-day)*		361	1,090	631	572	261
Inhalation Absorption Factor		1	1	1	1	1
Averaging Time (years)		70	70	70	70	70
Exposure Duration (years)		0.25	2	14	14	14
Exposure Frequency (days/year)		350	350	350	350	350
Age Sensitivity Factor		10	10	3	3	1
Fraction of Time at Home		0.85-1.0	0.85-1.0	0.72-1.0	0.72-1.0	0.73

* 95th percentile breathing rates for 3rd trimester and infants and 80th percentile for children and adults

Non-Cancer Hazards

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

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

Annual $PM_{2.5}$ Concentrations

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

Attachment 2: CalEEMod Modeling Output

Project Name: 325 Yolanda

Complete ALL Portions in Yellow

See Equipment Type TAB for type, horsepower and load factor

Project Size 252 Dwelling Units; 10.4 total project acres disturbed

214,167 s.f. residential

3,900 s.f. retail

s.f. office/commercial

s.f. other, specify:

s.f. parking garage ; spaces

s.f. parking lot 493 spaces

Pile Driving? No

Construction Hours 7:00 am to 4:00 pm

OE Suggested Edits & Rationale		Qty	Description	HP	Load Factor	Hours/day	Total Work Days	Avg. Hours per day	Annual Hours	Comments
			Demolition	**Start Date:**	**1/1/2019**	**Total phase:**	**20**			**Overall Import/Export Volumes**
				End Date:	**1/28/2019**					
Only demo is of 17,360 sf warehouse	1	1	Concrete/Industrial Saws	81	0.73	8	20	8	160	**Demolition Volume**
	1	3	Excavators	162	0.38	8	20	8	480	Square footage of buildings to be demolished
	1	2	Rubber-Tired Dozers	247	0.4	8	20	8	320	(*or* total tons to be hauled
			Tractors/Loaders/Backhoes	97	0.37			0	0	**17360** square feet *or*
										? Hauling volume (tons
			Site Preperation	**Start Date:**	**1/29/2019**	**Total phase:**	**10**			Any pavement demolished and hauled? **?** **tons**
				End Date:	**2/11/2019**					
			Graders	187	0.41			0	0	
Nearly vacant site, minimal vegetation	1	3	Rubber-Tired Dozers	247	0.4	8	10	8	240	
	1	4	Tractors/Loaders/Backhoes	97	0.37	8	10	8	320	
			Grading / Excavation	**Start Date:**	**2/12/2019**	**Total phase:**	**30**			
				End Date:	**3/25/2019**					**Soil Hauling Volume**
		2	Excavators	162	0.38	8	30	8	480	Export volume = **?** cubic yards?
excavation and recompaction will occur depth 1-2 ft		1	Graders	187	0.41	8	30	8	240	Import volume = **?** cubic yards?
		1	Rubber Tired Dozers	247	0.4	8	30	8	240	
	1	2	Scrapers	367	0.48	8	30	8	480	
		2	Tractors/Loaders/Backhoes	97	0.37	8	30	8	480	
			Other Equipment?							
			Trenching/Foundation	**Start Date:**		**Total phase:**				
				End Date:						
			Tractor/Loader/Backhoe	97	0.37			#DIV/0!	0	
			Excavators	162	0.38			#DIV/0!	0	
			Other Equipment?							
			Building - Exterior	**Start Date:**	**3/26/2019**	**Total phase:**	**300**			**Cement Trucks? _?_ Total Round-Trips**
				End Date:	**5/18/2020**					
Crane only used to l	adjust hrs to 2	1	Cranes	231	0.29	7	300	7	2100	Electric? (Y/N) ? Otherwise assumed diesel
Temporary powerlin	2	3	Forklifts	89	0.2	8	300	8	7200	Liquid Propane (LPG)? (Y/N) ? Otherwise Assumed diesel
	adjust hr downward electricity will be available	1	Generator Sets	84	0.74	8	300	8	2400	Or temporary line power? (Y/N) ?
	2	3	Tractors/Loaders/Backhoes	97	0.37	7	300	7	6300	otherwise, assume diesel generator
	1	1	Welders	46	0.45	8	300	8	2400	
			Other Equipment?							
			Building - Interior/Architectural Coating	**Start Date:**	**6/16/2020**	**Total phase:**	**20**			
				End Date:	**7/13/2020**					
		1	Air Compressors	78	0.48	6	20	6	120	
			Aerial Lift	62	0.31			0	0	
			Other Equipment?							
			Paving	**Start Date:**	**5/19/2020**	**Total phase:**	**20**			
				Start Date:	**6/15/2020**					
			Cement and Mortar Mixers	9	0.56			0	0	
suggest adjusting hours down for some of this equipment in this phase, all will not be operating concurently.		2	Pavers	130	0.42	8	20	8	320	**Asphalt? _?__ cubic yards or _?__ round trips?**
		2	Paving Equipment	132	0.36	8	20	8	320	
		2	Rollers	80	0.38	8	20	8	320	
			Tractors/Loaders/Backhoes	97	0.37			0	0	
			Other Equipment?							

Equipment types listed in "Equipment Types" worksheet tab.

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

It is assumed that water trucks would be used during grading

Add or subtract phases and equipment, as appropriate

Modify horepower or load factor, as appropriate

325 Yolanda Avenue, Santa Rosa AQ

Sonoma-San Francisco County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	494.00	Space	0.00	197,600.00	0
Fast Food Restaurant with Drive Thru	3.87	1000sqft	2.00	3,867.00	0
Apartments Mid Rise	252.00	Dwelling Unit	8.40	214,167.00	721

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	75
Climate Zone	4			**Operational Year**	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E 2020 Rates = 290

Land Use - apartments: 252 units; fast food: 3867-sf; parking: 410 for residential, 84 for in-n-out for a total of 494

Off-road Equipment -

Off-road Equipment - Client provided info

Off-road Equipment - Client provided info, 1 unit per equipment

Off-road Equipment - Client provided info, 1 scraper

Off-road Equipment - Client provided info

Off-road Equipment - Client provided info, 1 unit per equipment

Demolition - Client provided info

Vehicle Trips - Vehicle Trips - Fast Food: weekday 772.37, sat 1124.07, sun 844.92; Apartments: weekday 5.44, sat 5.23, sun 4.79, 3 mile trip length for In N Out

Woodstoves - all gas, no wood

Water And Wastewater - 100% aerobic

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	1,934.00	1,950.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	5,801.00	5,850.00
tblArchitecturalCoating	ConstArea_Parking	11,856.00	11,832.00
tblAreaCoating	Area_Nonresidential_Exterior	1934	1950
tblAreaCoating	Area_Nonresidential_Interior	5801	5850
tblAreaCoating	Area_Parking	11856	11832
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	37.80	80.64
tblFireplaces	NumberWood	42.84	0.00
tblGrading	AcresOfGrading	45.00	75.00
tblLandUse	LandUseSquareFeet	3,870.00	3,867.00
tblLandUse	LandUseSquareFeet	252,000.00	214,167.00
tblLandUse	LotAcreage	4.45	0.00
tblLandUse	LotAcreage	0.09	2.00
tblLandUse	LotAcreage	6.63	8.40
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	UsageHours	7.00	2.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00

tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblSolidWaste	SolidWasteGenerationRate	44.58	44.92
tblTripsAndVMT	WorkerTripNumber	8.00	15.00
tblTripsAndVMT	WorkerTripNumber	5.00	18.00
tblTripsAndVMT	WorkerTripNumber	18.00	20.00
tblVehicleTrips	CC_TL	7.30	3.00
tblVehicleTrips	ST_TR	6.39	5.23
tblVehicleTrips	ST_TR	722.03	1,124.07
tblVehicleTrips	SU_TR	5.86	4.79
tblVehicleTrips	SU_TR	542.72	844.92
tblVehicleTrips	WD_TR	6.65	5.44
tblVehicleTrips	WD_TR	496.12	772.37
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	IndoorWaterUseRate	1,174,675.47	1,183,781.48
tblWater	OutdoorWaterUseRate	74,979.29	75,560.52
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.3996	3.0002	2.8718	6.4500e-003	0.4226	0.1269	0.5494	0.1402	0.1189	0.2591	0.0000	585.5509	585.5509	0.0781	0.0000	587.5021
2020	1.7208	1.0330	1.1835	2.8300e-003	0.1279	0.0407	0.1686	0.0345	0.0383	0.0728	0.0000	255.6512	255.6512	0.0279	0.0000	256.3495
Maximum	**1.7208**	**3.0002**	**2.8718**	**6.4500e-003**	**0.4226**	**0.1269**	**0.5494**	**0.1402**	**0.1189**	**0.2591**	**0.0000**	**585.5509**	**585.5509**	**0.0781**	**0.0000**	**587.5021**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.3996	3.0002	2.8718	6.4500e-003	0.4226	0.1269	0.5494	0.1402	0.1189	0.2591	0.0000	585.5506	585.5506	0.0781	0.0000	587.5018
2020	1.7208	1.0330	1.1835	2.8300e-003	0.1279	0.0407	0.1686	0.0345	0.0383	0.0728	0.0000	255.6511	255.6511	0.0279	0.0000	256.3494
Maximum	**1.7208**	**3.0002**	**2.8718**	**6.4500e-003**	**0.4226**	**0.1269**	**0.5494**	**0.1402**	**0.1189**	**0.2591**	**0.0000**	**585.5506**	**585.5506**	**0.0781**	**0.0000**	**587.5018**

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

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2019**	**3-31-2019**	1.0310	1.0310
2	**4-1-2019**	**6-30-2019**	0.7772	0.7772
3	**7-1-2019**	**9-30-2019**	0.7858	0.7858
4	**10-1-2019**	**12-31-2019**	0.8010	0.8010

5	**1-1-2020**	**3-31-2020**	0.7189	0.7189
6	**4-1-2020**	**6-30-2020**	1.3039	1.3039
7	**7-1-2020**	**9-30-2020**	0.7394	0.7394
		Highest	1.3039	1.3039

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.0993	0.0333	2.0634	7.4000e-004		0.0404	0.0404		0.0404	0.0404	3.9304	13.1324	17.0628	0.0216	1.8000e-004	17.6566
Energy	0.0161	0.1397	0.0758	8.8000e-004		0.0111	0.0111		0.0111	0.0111	0.0000	321.6681	321.6681	0.0193	6.2800e-003	324.0224
Mobile	1.2353	5.2233	10.3763	0.0241	1.7607	0.0267	1.7874	0.4739	0.0251	0.4989	0.0000	2,216.4959	2,216.4959	0.1270	0.0000	2,219.6706
Waste						0.0000	0.0000		0.0000	0.0000	32.6491	0.0000	32.6491	1.9295	0.0000	80.8867
Water						0.0000	0.0000		0.0000	0.0000	6.2278	17.3294	23.5572	0.0232	0.0139	28.2792
Total	**2.3507**	**5.3963**	**12.5155**	**0.0257**	**1.7607**	**0.0783**	**1.8390**	**0.4739**	**0.0766**	**0.5505**	**42.8073**	**2,568.6259**	**2,611.4331**	**2.1205**	**0.0204**	**2,670.5155**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.0993	0.0333	2.0634	7.4000e-004		0.0404	0.0404		0.0404	0.0404	3.9304	13.1324	17.0628	0.0216	1.8000e-004	17.6566
Energy	0.0161	0.1397	0.0758	8.8000e-004		0.0111	0.0111		0.0111	0.0111	0.0000	321.6681	321.6681	0.0193	6.2800e-003	324.0224

Mobile	1.2353	5.2233	10.3763	0.0241	1.7607	0.0267	1.7874	0.4739	0.0251	0.4989	0.0000	2,216.4959	2,216.4959	0.1270	0.0000	2,219.6706
Waste						0.0000	0.0000		0.0000	0.0000	32.6491	0.0000	32.6491	1.9295	0.0000	80.8867
Water						0.0000	0.0000		0.0000	0.0000	6.2278	17.3294	23.5572	0.0232	0.0139	28.2792
Total	**2.3507**	**5.3963**	**12.5155**	**0.0257**	**1.7607**	**0.0783**	**1.8390**	**0.4739**	**0.0766**	**0.5505**	**42.8073**	**2,568.6259**	**2,611.4331**	**2.1205**	**0.0204**	**2,670.5155**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2019	1/28/2019	5	20	
2	Site Preparation	Site Preparation	1/29/2019	2/11/2019	5	10	
3	Grading	Grading	2/12/2019	3/25/2019	5	30	
4	Building Construction	Building Construction	3/26/2019	5/18/2020	5	300	
5	Paving	Paving	5/19/2020	6/15/2020	5	20	
6	Architectural Coating	Architectural Coating	6/16/2020	7/13/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 0

Residential Indoor: 433,688; Residential Outdoor: 144,563; Non-Residential Indoor: 5,850; Non-Residential Outdoor: 1,950; Striped

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	1	8.00	158	0.38

Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	1	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	2.00	231	0.29
Building Construction	Forklifts	2	8.00	89	0.20
Building Construction	Generator Sets	1	4.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	4.00	130	0.42
Paving	Paving Equipment	2	4.00	132	0.36
Paving	Rollers	2	4.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	3	15.00	0.00	79.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	7	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	266.00	60.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	53.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					8.5400e-003	0.0000	8.5400e-003	1.2900e-003	0.0000	1.2900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0186	0.1835	0.1125	2.0000e-004		9.4800e-003	9.4800e-003		8.9000e-003	8.9000e-003	0.0000	17.6830	17.6830	4.2700e-003	0.0000	17.7898
Total	**0.0186**	**0.1835**	**0.1125**	**2.0000e-004**	**8.5400e-003**	**9.4800e-003**	**0.0180**	**1.2900e-003**	**8.9000e-003**	**0.0102**	**0.0000**	**17.6830**	**17.6830**	**4.2700e-003**	**0.0000**	**17.7898**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.7000e-004	0.0128	2.6100e-003	3.0000e-005	6.6000e-004	6.0000e-005	7.2000e-004	1.8000e-004	6.0000e-005	2.4000e-004	0.0000	3.0738	3.0738	2.0000e-004	0.0000	3.0787
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8000e-004	5.9000e-004	5.8400e-003	1.0000e-005	1.1800e-003	1.0000e-005	1.1900e-003	3.1000e-004	1.0000e-005	3.2000e-004	0.0000	1.1190	1.1190	5.0000e-005	0.0000	1.1201
Total	**1.1500e-003**	**0.0134**	**8.4500e-003**	**4.0000e-005**	**1.8400e-003**	**7.0000e-005**	**1.9100e-003**	**4.9000e-004**	**7.0000e-005**	**5.6000e-004**	**0.0000**	**4.1928**	**4.1928**	**2.5000e-004**	**0.0000**	**4.1988**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Fugitive Dust					8.5400e-003	0.0000	8.5400e-003	1.2900e-003	0.0000	1.2900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0186	0.1835	0.1125	2.0000e-004		9.4700e-003	9.4700e-003		8.9000e-003	8.9000e-003	0.0000	17.6830	17.6830	4.2700e-003	0.0000	17.7898
Total	**0.0186**	**0.1835**	**0.1125**	**2.0000e-004**	**8.5400e-003**	**9.4700e-003**	**0.0180**	**1.2900e-003**	**8.9000e-003**	**0.0102**	**0.0000**	**17.6830**	**17.6830**	**4.2700e-003**	**0.0000**	**17.7898**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.7000e-004	0.0128	2.6100e-003	3.0000e-005	6.6000e-004	6.0000e-005	7.2000e-004	1.8000e-004	6.0000e-005	2.4000e-004	0.0000	3.0738	3.0738	2.0000e-004	0.0000	3.0787
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8000e-004	5.9000e-004	5.8400e-003	1.0000e-005	1.1800e-003	1.0000e-005	1.1900e-003	3.1000e-004	1.0000e-005	3.2000e-004	0.0000	1.1190	1.1190	5.0000e-005	0.0000	1.1201
Total	**1.1500e-003**	**0.0134**	**8.4500e-003**	**4.0000e-005**	**1.8400e-003**	**7.0000e-005**	**1.9100e-003**	**4.9000e-004**	**7.0000e-005**	**5.6000e-004**	**0.0000**	**4.1928**	**4.1928**	**2.5000e-004**	**0.0000**	**4.1988**

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0301	0.0000	0.0301	0.0166	0.0000	0.0166	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.8400e-003	0.0721	0.0329	6.0000e-005		3.7200e-003	3.7200e-003		3.4300e-003	3.4300e-003	0.0000	5.2298	5.2298	1.6500e-003	0.0000	5.2712

Total	**6.8400e-003**	**0.0721**	**0.0329**	**6.0000e-005**	**0.0301**	**3.7200e-003**	**0.0338**	**0.0166**	**3.4300e-003**	**0.0200**	**0.0000**	**5.2298**	**5.2298**	**1.6500e-003**	**0.0000**	**5.2712**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.7000e-004	3.5000e-004	3.5000e-003	1.0000e-005	7.1000e-004	1.0000e-005	7.1000e-004	1.9000e-004	1.0000e-005	1.9000e-004	0.0000	0.6714	0.6714	3.0000e-005	0.0000	0.6721
Total	**4.7000e-004**	**3.5000e-004**	**3.5000e-003**	**1.0000e-005**	**7.1000e-004**	**1.0000e-005**	**7.1000e-004**	**1.9000e-004**	**1.0000e-005**	**1.9000e-004**	**0.0000**	**0.6714**	**0.6714**	**3.0000e-005**	**0.0000**	**0.6721**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0301	0.0000	0.0301	0.0166	0.0000	0.0166	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.8400e-003	0.0721	0.0329	6.0000e-005		3.7200e-003	3.7200e-003		3.4300e-003	3.4300e-003	0.0000	5.2298	5.2298	1.6500e-003	0.0000	5.2712
Total	**6.8400e-003**	**0.0721**	**0.0329**	**6.0000e-005**	**0.0301**	**3.7200e-003**	**0.0338**	**0.0166**	**3.4300e-003**	**0.0200**	**0.0000**	**5.2298**	**5.2298**	**1.6500e-003**	**0.0000**	**5.2712**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.7000e-004	3.5000e-004	3.5000e-003	1.0000e-005	7.1000e-004	1.0000e-005	7.1000e-004	1.9000e-004	1.0000e-005	1.9000e-004	0.0000	0.6714	0.6714	3.0000e-005	0.0000	0.6721
Total	**4.7000e-004**	**3.5000e-004**	**3.5000e-003**	**1.0000e-005**	**7.1000e-004**	**1.0000e-005**	**7.1000e-004**	**1.9000e-004**	**1.0000e-005**	**1.9000e-004**	**0.0000**	**0.6714**	**0.6714**	**3.0000e-005**	**0.0000**	**0.6721**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0551	0.6241	0.3797	7.0000e-004		0.0282	0.0282		0.0259	0.0259	0.0000	63.1429	63.1429	0.0200	0.0000	63.6423
Total	**0.0551**	**0.6241**	**0.3797**	**7.0000e-004**	**0.1301**	**0.0282**	**0.1583**	**0.0540**	**0.0259**	**0.0799**	**0.0000**	**63.1429**	**63.1429**	**0.0200**	**0.0000**	**63.6423**

Unmitigated Construction Off-Site

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

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5600e-003	1.1700e-003	0.0117	2.0000e-005	2.3500e-003	2.0000e-005	2.3700e-003	6.3000e-004	2.0000e-005	6.5000e-004	0.0000	2.2379	2.2379	9.0000e-005	0.0000	2.2402
Total	**1.5600e-003**	**1.1700e-003**	**0.0117**	**2.0000e-005**	**2.3500e-003**	**2.0000e-005**	**2.3700e-003**	**6.3000e-004**	**2.0000e-005**	**6.5000e-004**	**0.0000**	**2.2379**	**2.2379**	**9.0000e-005**	**0.0000**	**2.2402**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0551	0.6241	0.3797	7.0000e-004		0.0282	0.0282		0.0259	0.0259	0.0000	63.1428	63.1428	0.0200	0.0000	63.6422
Total	**0.0551**	**0.6241**	**0.3797**	**7.0000e-004**	**0.1301**	**0.0282**	**0.1583**	**0.0540**	**0.0259**	**0.0799**	**0.0000**	**63.1428**	**63.1428**	**0.0200**	**0.0000**	**63.6422**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5600e-003	1.1700e-003	0.0117	2.0000e-005	2.3500e-003	2.0000e-005	2.3700e-003	6.3000e-004	2.0000e-005	6.5000e-004	0.0000	2.2379	2.2379	9.0000e-005	0.0000	2.2402
Total	**1.5600e-003**	**1.1700e-003**	**0.0117**	**2.0000e-005**	**2.3500e-003**	**2.0000e-005**	**2.3700e-003**	**6.3000e-004**	**2.0000e-005**	**6.5000e-004**	**0.0000**	**2.2379**	**2.2379**	**9.0000e-005**	**0.0000**	**2.2402**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1468	1.2022	1.0713	1.5900e-003		0.0775	0.0775		0.0730	0.0730	0.0000	136.9985	136.9985	0.0333	0.0000	137.8319
Total	**0.1468**	**1.2022**	**1.0713**	**1.5900e-003**		**0.0775**	**0.0775**		**0.0730**	**0.0730**	**0.0000**	**136.9985**	**136.9985**	**0.0333**	**0.0000**	**137.8319**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0303	0.7989	0.2117	1.6200e-003	0.0391	6.2200e-003	0.0453	0.0113	5.9500e-003	0.0173	0.0000	155.9716	155.9716	0.0104	0.0000	156.2306
Worker	0.1388	0.1047	1.0401	2.2100e-003	0.2098	1.7700e-003	0.2116	0.0558	1.6400e-003	0.0575	0.0000	199.4230	199.4230	8.0900e-003	0.0000	199.6253
Total	**0.1692**	**0.9036**	**1.2517**	**3.8300e-003**	**0.2489**	**7.9900e-003**	**0.2569**	**0.0671**	**7.5900e-003**	**0.0747**	**0.0000**	**355.3946**	**355.3946**	**0.0185**	**0.0000**	**355.8559**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1468	1.2022	1.0713	1.5900e-003		0.0775	0.0775		0.0730	0.0730	0.0000	136.9983	136.9983	0.0333	0.0000	137.8317
Total	**0.1468**	**1.2022**	**1.0713**	**1.5900e-003**		**0.0775**	**0.0775**		**0.0730**	**0.0730**	**0.0000**	**136.9983**	**136.9983**	**0.0333**	**0.0000**	**137.8317**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0303	0.7989	0.2117	1.6200e-003	0.0391	6.2200e-003	0.0453	0.0113	5.9500e-003	0.0173	0.0000	155.9716	155.9716	0.0104	0.0000	156.2306
Worker	0.1388	0.1047	1.0401	2.2100e-003	0.2098	1.7700e-003	0.2116	0.0558	1.6400e-003	0.0575	0.0000	199.4230	199.4230	8.0900e-003	0.0000	199.6253
Total	**0.1692**	**0.9036**	**1.2517**	**3.8300e-003**	**0.2489**	**7.9900e-003**	**0.2569**	**0.0671**	**7.5900e-003**	**0.0747**	**0.0000**	**355.3946**	**355.3946**	**0.0185**	**0.0000**	**355.8559**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0648	0.5414	0.5197	7.8000e-004		0.0330	0.0330		0.0311	0.0311	0.0000	66.5097	66.5097	0.0161	0.0000	66.9132

Total	**0.0648**	**0.5414**	**0.5197**	**7.8000e-004**		**0.0330**	**0.0330**		**0.0311**	**0.0311**	**0.0000**	**66.5097**	**66.5097**	**0.0161**	**0.0000**	**66.9132**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0117	0.3564	0.0900	7.9000e-004	0.0193	1.9000e-003	0.0212	5.5700e-003	1.8200e-003	7.3800e-003	0.0000	76.4655	76.4655	4.6800e-003	0.0000	76.5826
Worker	0.0628	0.0456	0.4586	1.0500e-003	0.1033	8.4000e-004	0.1042	0.0275	7.8000e-004	0.0283	0.0000	95.1925	95.1925	3.4900e-003	0.0000	95.2798
Total	**0.0745**	**0.4021**	**0.5486**	**1.8400e-003**	**0.1226**	**2.7400e-003**	**0.1253**	**0.0331**	**2.6000e-003**	**0.0357**	**0.0000**	**171.6580**	**171.6580**	**8.1700e-003**	**0.0000**	**171.8624**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0648	0.5414	0.5197	7.8000e-004		0.0330	0.0330		0.0311	0.0311	0.0000	66.5096	66.5096	0.0161	0.0000	66.9131
Total	**0.0648**	**0.5414**	**0.5197**	**7.8000e-004**		**0.0330**	**0.0330**		**0.0311**	**0.0311**	**0.0000**	**66.5096**	**66.5096**	**0.0161**	**0.0000**	**66.9131**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0117	0.3564	0.0900	7.9000e-004	0.0193	1.9000e-003	0.0212	5.5700e-003	1.8200e-003	7.3800e-003	0.0000	76.4655	76.4655	4.6800e-003	0.0000	76.5826
Worker	0.0628	0.0456	0.4586	1.0500e-003	0.1033	8.4000e-004	0.1042	0.0275	7.8000e-004	0.0283	0.0000	95.1925	95.1925	3.4900e-003	0.0000	95.2798
Total	**0.0745**	**0.4021**	**0.5486**	**1.8400e-003**	**0.1226**	**2.7400e-003**	**0.1253**	**0.0331**	**2.6000e-003**	**0.0357**	**0.0000**	**171.6580**	**171.6580**	**8.1700e-003**	**0.0000**	**171.8624**

3.6 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.7800e-003	0.0703	0.0733	1.1000e-004		3.7600e-003	3.7600e-003		3.4600e-003	3.4600e-003	0.0000	10.0141	10.0141	3.2400e-003	0.0000	10.0951
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.7800e-003**	**0.0703**	**0.0733**	**1.1000e-004**		**3.7600e-003**	**3.7600e-003**		**3.4600e-003**	**3.4600e-003**	**0.0000**	**10.0141**	**10.0141**	**3.2400e-003**	**0.0000**	**10.0951**

Unmitigated Construction Off-Site

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

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.2000e-004	5.2000e-004	5.2200e-003	1.0000e-005	1.1800e-003	1.0000e-005	1.1900e-003	3.1000e-004	1.0000e-005	3.2000e-004	0.0000	1.0844	1.0844	4.0000e-005	0.0000	1.0854
Total	**7.2000e-004**	**5.2000e-004**	**5.2200e-003**	**1.0000e-005**	**1.1800e-003**	**1.0000e-005**	**1.1900e-003**	**3.1000e-004**	**1.0000e-005**	**3.2000e-004**	**0.0000**	**1.0844**	**1.0844**	**4.0000e-005**	**0.0000**	**1.0854**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.7800e-003	0.0703	0.0733	1.1000e-004		3.7600e-003	3.7600e-003		3.4600e-003	3.4600e-003	0.0000	10.0141	10.0141	3.2400e-003	0.0000	10.0951
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.7800e-003**	**0.0703**	**0.0733**	**1.1000e-004**		**3.7600e-003**	**3.7600e-003**		**3.4600e-003**	**3.4600e-003**	**0.0000**	**10.0141**	**10.0141**	**3.2400e-003**	**0.0000**	**10.0951**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.2000e-004	5.2000e-004	5.2200e-003	1.0000e-005	1.1800e-003	1.0000e-005	1.1900e-003	3.1000e-004	1.0000e-005	3.2000e-004	0.0000	1.0844	1.0844	4.0000e-005	0.0000	1.0854
Total	**7.2000e-004**	**5.2000e-004**	**5.2200e-003**	**1.0000e-005**	**1.1800e-003**	**1.0000e-005**	**1.1900e-003**	**3.1000e-004**	**1.0000e-005**	**3.2000e-004**	**0.0000**	**1.0844**	**1.0844**	**4.0000e-005**	**0.0000**	**1.0854**

3.7 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.5691					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4200e-003	0.0168	0.0183	3.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	**1.5715**	**0.0168**	**0.0183**	**3.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.1100e-003**	**1.1100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.0000e-004**	**0.0000**	**2.5582**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5300e-003	1.8400e-003	0.0185	4.0000e-005	4.1600e-003	3.0000e-005	4.1900e-003	1.1100e-003	3.0000e-005	1.1400e-003	0.0000	3.8317	3.8317	1.4000e-004	0.0000	3.8352
Total	**2.5300e-003**	**1.8400e-003**	**0.0185**	**4.0000e-005**	**4.1600e-003**	**3.0000e-005**	**4.1900e-003**	**1.1100e-003**	**3.0000e-005**	**1.1400e-003**	**0.0000**	**3.8317**	**3.8317**	**1.4000e-004**	**0.0000**	**3.8352**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.5691					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4200e-003	0.0168	0.0183	3.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	**1.5715**	**0.0168**	**0.0183**	**3.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.1100e-003**	**1.1100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.0000e-004**	**0.0000**	**2.5582**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5300e-003	1.8400e-003	0.0185	4.0000e-005	4.1600e-003	3.0000e-005	4.1900e-003	1.1100e-003	3.0000e-005	1.1400e-003	0.0000	3.8317	3.8317	1.4000e-004	0.0000	3.8352
Total	**2.5300e-003**	**1.8400e-003**	**0.0185**	**4.0000e-005**	**4.1600e-003**	**3.0000e-005**	**4.1900e-003**	**1.1100e-003**	**3.0000e-005**	**1.1400e-003**	**0.0000**	**3.8317**	**3.8317**	**1.4000e-004**	**0.0000**	**3.8352**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Mitigated	1.2353	5.2233	10.3763	0.0241	1.7607	0.0267	1.7874	0.4739	0.0251	0.4989	0.0000	2,216.4959	2,216.4959	0.1270	0.0000	2,219.6706
Unmitigated	1.2353	5.2233	10.3763	0.0241	1.7607	0.0267	1.7874	0.4739	0.0251	0.4989	0.0000	2,216.4959	2,216.4959	0.1270	0.0000	2,219.6706

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,370.88	1,317.96	1207.08	3,094,689	3,094,689
Fast Food Restaurant with Drive Thru	2,989.07	4,350.15	3269.84	1,650,150	1,650,150
Parking Lot	0.00	0.00	0.00		
Total	4,359.95	5,668.11	4,476.92	4,744,839	4,744,839

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-...	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Fast Food Restaurant with Drive Thru	9.50	3.00	7.30	2.20	78.80	19.00	29	21	50
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.578299	0.039453	0.169996	0.109068	0.028307	0.006716	0.029274	0.026666	0.003071	0.001838	0.005325	0.000874	0.001112
Fast Food Restaurant with Drive Thru	0.578299	0.039453	0.169996	0.109068	0.028307	0.006716	0.029274	0.026666	0.003071	0.001838	0.005325	0.000874	0.001112
Parking Lot	0.578299	0.039453	0.169996	0.109068	0.028307	0.006716	0.029274	0.026666	0.003071	0.001838	0.005325	0.000874	0.001112

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	162.5899	162.5899	0.0163	3.3600e-003	163.9988
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	162.5899	162.5899	0.0163	3.3600e-003	163.9988
NaturalGas Mitigated	0.0161	0.1397	0.0758	8.8000e-004		0.0111	0.0111		0.0111	0.0111	0.0000	159.0782	159.0782	3.0500e-003	2.9200e-003	160.0236
NaturalGas Unmitigated	0.0161	0.1397	0.0758	8.8000e-004		0.0111	0.0111		0.0111	0.0111	0.0000	159.0782	159.0782	3.0500e-003	2.9200e-003	160.0236

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	2.17714e+006	0.0117	0.1003	0.0427	6.4000e-004		8.1100e-003	8.1100e-003		8.1100e-003	8.1100e-003	0.0000	116.1806	116.1806	2.2300e-003	2.1300e-003	116.8710
Fast Food Restaurant with Drive Thru	803872	4.3300e-003	0.0394	0.0331	2.4000e-004		2.9900e-003	2.9900e-003		2.9900e-003	2.9900e-003	0.0000	42.8977	42.8977	8.2000e-004	7.9000e-004	43.1526
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0161**	**0.1397**	**0.0758**	**8.8000e-004**		**0.0111**	**0.0111**		**0.0111**	**0.0111**	**0.0000**	**159.0782**	**159.0782**	**3.0500e-003**	**2.9200e-003**	**160.0236**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	2.17714e+006	0.0117	0.1003	0.0427	6.4000e-004		8.1100e-003	8.1100e-003		8.1100e-003	8.1100e-003	0.0000	116.1806	116.1806	2.2300e-003	2.1300e-003	116.8710
Fast Food Restaurant with Drive Thru	803872	4.3300e-003	0.0394	0.0331	2.4000e-004		2.9900e-003	2.9900e-003		2.9900e-003	2.9900e-003	0.0000	42.8977	42.8977	8.2000e-004	7.9000e-004	43.1526
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0161**	**0.1397**	**0.0758**	**8.8000e-004**		**0.0111**	**0.0111**		**0.0111**	**0.0111**	**0.0000**	**159.0782**	**159.0782**	**3.0500e-003**	**2.9200e-003**	**160.0236**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.04034e+006	136.8487	0.0137	2.8300e-003	138.0346
Fast Food Restaurant with Drive Thru	126528	16.6438	1.6600e-003	3.4000e-004	16.7880
Parking Lot	69160	9.0974	9.1000e-004	1.9000e-004	9.1763
Total		**162.5899**	**0.0163**	**3.3600e-003**	**163.9988**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.04034e+006	136.8487	0.0137	2.8300e-003	138.0346

Fast Food Restaurant with Drive Thru	126528	16.6438	1.6600e-003	3.4000e-004	16.7880
Parking Lot	69160	9.0974	9.1000e-004	1.9000e-004	9.1763
Total		**162.5899**	**0.0163**	**3.3600e-003**	**163.9988**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.0993	0.0333	2.0634	7.4000e-004		0.0404	0.0404		0.0404	0.0404	3.9304	13.1324	17.0628	0.0216	1.8000e-004	17.6566
Unmitigated	1.0993	0.0333	2.0634	7.4000e-004		0.0404	0.0404		0.0404	0.0404	3.9304	13.1324	17.0628	0.0216	1.8000e-004	17.6566

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1569					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8643					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Hearth	0.0208	0.0116	0.1836	6.4000e-004		0.0301	0.0301		0.0301	0.0301	3.9304	10.0670	13.9974	0.0186	1.8000e-004	14.5166
Landscaping	0.0572	0.0217	1.8798	1.0000e-004		0.0104	0.0104		0.0104	0.0104	0.0000	3.0654	3.0654	2.9900e-003	0.0000	3.1400
Total	**1.0993**	**0.0333**	**2.0634**	**7.4000e-004**		**0.0404**	**0.0404**		**0.0404**	**0.0404**	**3.9304**	**13.1324**	**17.0628**	**0.0216**	**1.8000e-004**	**17.6566**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1569					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8643					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0208	0.0116	0.1836	6.4000e-004		0.0301	0.0301		0.0301	0.0301	3.9304	10.0670	13.9974	0.0186	1.8000e-004	14.5166
Landscaping	0.0572	0.0217	1.8798	1.0000e-004		0.0104	0.0104		0.0104	0.0104	0.0000	3.0654	3.0654	2.9900e-003	0.0000	3.1400
Total	**1.0993**	**0.0333**	**2.0634**	**7.4000e-004**		**0.0404**	**0.0404**		**0.0404**	**0.0404**	**3.9304**	**13.1324**	**17.0628**	**0.0216**	**1.8000e-004**	**17.6566**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	23.5572	0.0232	0.0139	28.2792

Unmitigated	23.5572	0.0232	0.0139	28.2792

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	16.4188 / 10.351	22.2610	0.0216	0.0130	26.6680
Fast Food Restaurant with Drive Thru	1.18378 / 0.0755605	1.2962	1.5300e-003	9.3000e-004	1.6113
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**23.5572**	**0.0232**	**0.0139**	**28.2792**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	16.4188 / 10.351	22.2610	0.0216	0.0130	26.6680
Fast Food Restaurant with Drive Thru	1.18378 / 0.0755605	1.2962	1.5300e-003	9.3000e-004	1.6113
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**23.5572**	**0.0232**	**0.0139**	**28.2792**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	32.6491	1.9295	0.0000	80.8867
Unmitigated	32.6491	1.9295	0.0000	80.8867

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	115.92	23.5307	1.3906	0.0000	58.2963
Fast Food Restaurant with Drive Thru	44.92	9.1184	0.5389	0.0000	22.5903
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**32.6491**	**1.9295**	**0.0000**	**80.8867**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	115.92	23.5307	1.3906	0.0000	58.2963
Fast Food Restaurant with Drive Thru	44.92	9.1184	0.5389	0.0000	22.5903
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**32.6491**	**1.9295**	**0.0000**	**80.8867**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

325 Yolanda Avenue, Santa Rosa AQ - Sonoma-San Francisco County, Annual

325 Yolanda Avenue, Santa Rosa AQ

Sonoma-San Francisco County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	494.00	Space	0.00	197,600.00	0
Fast Food Restaurant with Drive Thru	3.87	1000sqft	2.00	3,867.00	0
Apartments Mid Rise	252.00	Dwelling Unit	8.40	214,167.00	721

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	75
Climate Zone	4			**Operational Year**	2030
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E 2020 Rates = 290

Land Use - apartments: 252 units; fast food: 3867-sf; parking: 410 for residential, 84 for in-n-out for a total of 494

Off-road Equipment -

Off-road Equipment - Client provided info

Off-road Equipment - Client provided info, 1 unit per equipment

Off-road Equipment - Client provided info, 1 scraper

Off-road Equipment - Client provided info

Off-road Equipment - Client provided info, 1 unit per equipment

Demolition - Client provided info

Vehicle Trips - Vehicle Trips - Fast Food: weekday 772.37, sat 1124.07, sun 844.92; Apartments: weekday 5.44, sat 5.23, sun 4.79, 3 mile trip length for In N Out

Woodstoves - all gas, no wood

Water And Wastewater - 100% aerobic

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	1,934.00	1,950.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	5,801.00	5,850.00
tblArchitecturalCoating	ConstArea_Parking	11,856.00	11,832.00
tblAreaCoating	Area_Nonresidential_Exterior	1934	1950
tblAreaCoating	Area_Nonresidential_Interior	5801	5850
tblAreaCoating	Area_Parking	11856	11832
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	37.80	80.64
tblFireplaces	NumberWood	42.84	0.00
tblGrading	AcresOfGrading	45.00	75.00
tblLandUse	LandUseSquareFeet	3,870.00	3,867.00
tblLandUse	LandUseSquareFeet	252,000.00	214,167.00
tblLandUse	LotAcreage	4.45	0.00
tblLandUse	LotAcreage	0.09	2.00
tblLandUse	LotAcreage	6.63	8.40
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	UsageHours	7.00	2.00
tblOffRoadEquipment	UsageHours	8.00	4.00

tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblSolidWaste	SolidWasteGenerationRate	44.58	44.92
tblTripsAndVMT	WorkerTripNumber	8.00	15.00
tblTripsAndVMT	WorkerTripNumber	5.00	18.00
tblTripsAndVMT	WorkerTripNumber	18.00	20.00
tblVehicleTrips	CC_TL	7.30	3.00
tblVehicleTrips	ST_TR	6.39	5.23
tblVehicleTrips	ST_TR	722.03	1,124.07
tblVehicleTrips	SU_TR	5.86	4.79
tblVehicleTrips	SU_TR	542.72	844.92
tblVehicleTrips	WD_TR	6.65	5.44
tblVehicleTrips	WD_TR	496.12	772.37
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	IndoorWaterUseRate	1,174,675.47	1,183,781.48
tblWater	OutdoorWaterUseRate	74,979.29	75,560.52
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.3996	3.0002	2.8718	6.4500e-003	0.4226	0.1269	0.5494	0.1402	0.1189	0.2591	0.0000	585.5509	585.5509	0.0781	0.0000	587.5021
2020	1.7208	1.0330	1.1835	2.8300e-003	0.1279	0.0407	0.1686	0.0345	0.0383	0.0728	0.0000	255.6512	255.6512	0.0279	0.0000	256.3495
Maximum	**1.7208**	**3.0002**	**2.8718**	**6.4500e-003**	**0.4226**	**0.1269**	**0.5494**	**0.1402**	**0.1189**	**0.2591**	**0.0000**	**585.5509**	**585.5509**	**0.0781**	**0.0000**	**587.5021**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.3996	3.0002	2.8718	6.4500e-003	0.4226	0.1269	0.5494	0.1402	0.1189	0.2591	0.0000	585.5506	585.5506	0.0781	0.0000	587.5018
2020	1.7208	1.0330	1.1835	2.8300e-003	0.1279	0.0407	0.1686	0.0345	0.0383	0.0728	0.0000	255.6511	255.6511	0.0279	0.0000	256.3494
Maximum	**1.7208**	**3.0002**	**2.8718**	**6.4500e-003**	**0.4226**	**0.1269**	**0.5494**	**0.1402**	**0.1189**	**0.2591**	**0.0000**	**585.5506**	**585.5506**	**0.0781**	**0.0000**	**587.5018**

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

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2019**	**3-31-2019**	1.0310	1.0310
2	**4-1-2019**	**6-30-2019**	0.7772	0.7772
3	**7-1-2019**	**9-30-2019**	0.7858	0.7858
4	**10-1-2019**	**12-31-2019**	0.8010	0.8010

5	**1-1-2020**	**3-31-2020**	0.7189	0.7189
6	**4-1-2020**	**6-30-2020**	1.3039	1.3039
7	**7-1-2020**	**9-30-2020**	0.7394	0.7394
		Highest	1.3039	1.3039

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.0983	0.0332	2.0544	7.4000e-004		0.0405	0.0405		0.0405	0.0405	3.9304	13.1324	17.0628	0.0215	1.8000e-004	17.6553
Energy	0.0161	0.1397	0.0758	8.8000e-004		0.0111	0.0111		0.0111	0.0111	0.0000	321.6681	321.6681	0.0193	6.2800e-003	324.0224
Mobile	0.6458	3.8104	5.2183	0.0190	1.7581	0.0142	1.7723	0.4727	0.0132	0.4859	0.0000	1,758.5269	1,758.5269	0.0783	0.0000	1,760.4837
Waste						0.0000	0.0000		0.0000	0.0000	32.6491	0.0000	32.6491	1.9295	0.0000	80.8867
Water						0.0000	0.0000		0.0000	0.0000	6.2278	17.3294	23.5572	0.0232	0.0139	28.2792
Total	**1.7601**	**3.9833**	**7.3485**	**0.0206**	**1.7581**	**0.0658**	**1.8238**	**0.4727**	**0.0648**	**0.5374**	**42.8073**	**2,110.6568**	**2,153.4641**	**2.0718**	**0.0204**	**2,211.3273**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.0983	0.0332	2.0544	7.4000e-004		0.0405	0.0405		0.0405	0.0405	3.9304	13.1324	17.0628	0.0215	1.8000e-004	17.6553
Energy	0.0161	0.1397	0.0758	8.8000e-004		0.0111	0.0111		0.0111	0.0111	0.0000	321.6681	321.6681	0.0193	6.2800e-003	324.0224

Mobile	0.6458	3.8104	5.2183	0.0190	1.7581	0.0142	1.7723	0.4727	0.0132	0.4859	0.0000	1,758.5269	1,758.5269	0.0783	0.0000	1,760.4837
Waste						0.0000	0.0000		0.0000	0.0000	32.6491	0.0000	32.6491	1.9295	0.0000	80.8867
Water						0.0000	0.0000		0.0000	0.0000	6.2278	17.3294	23.5572	0.0232	0.0139	28.2792
Total	**1.7601**	**3.9833**	**7.3485**	**0.0206**	**1.7581**	**0.0658**	**1.8238**	**0.4727**	**0.0648**	**0.5374**	**42.8073**	**2,110.6568**	**2,153.4641**	**2.0718**	**0.0204**	**2,211.3273**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2019	1/28/2019	5	20	
2	Site Preparation	Site Preparation	1/29/2019	2/11/2019	5	10	
3	Grading	Grading	2/12/2019	3/25/2019	5	30	
4	Building Construction	Building Construction	3/26/2019	5/18/2020	5	300	
5	Paving	Paving	5/19/2020	6/15/2020	5	20	
6	Architectural Coating	Architectural Coating	6/16/2020	7/13/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 0

Residential Indoor: 433,688; Residential Outdoor: 144,563; Non-Residential Indoor: 5,850; Non-Residential Outdoor: 1,950; Striped

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	1	8.00	158	0.38

Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	1	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	2.00	231	0.29
Building Construction	Forklifts	2	8.00	89	0.20
Building Construction	Generator Sets	1	4.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	4.00	130	0.42
Paving	Paving Equipment	2	4.00	132	0.36
Paving	Rollers	2	4.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	3	15.00	0.00	79.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	7	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	266.00	60.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	53.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					8.5400e-003	0.0000	8.5400e-003	1.2900e-003	0.0000	1.2900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0186	0.1835	0.1125	2.0000e-004		9.4800e-003	9.4800e-003		8.9000e-003	8.9000e-003	0.0000	17.6830	17.6830	4.2700e-003	0.0000	17.7898
Total	**0.0186**	**0.1835**	**0.1125**	**2.0000e-004**	**8.5400e-003**	**9.4800e-003**	**0.0180**	**1.2900e-003**	**8.9000e-003**	**0.0102**	**0.0000**	**17.6830**	**17.6830**	**4.2700e-003**	**0.0000**	**17.7898**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.7000e-004	0.0128	2.6100e-003	3.0000e-005	6.6000e-004	6.0000e-005	7.2000e-004	1.8000e-004	6.0000e-005	2.4000e-004	0.0000	3.0738	3.0738	2.0000e-004	0.0000	3.0787
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8000e-004	5.9000e-004	5.8400e-003	1.0000e-005	1.1800e-003	1.0000e-005	1.1900e-003	3.1000e-004	1.0000e-005	3.2000e-004	0.0000	1.1190	1.1190	5.0000e-005	0.0000	1.1201
Total	**1.1500e-003**	**0.0134**	**8.4500e-003**	**4.0000e-005**	**1.8400e-003**	**7.0000e-005**	**1.9100e-003**	**4.9000e-004**	**7.0000e-005**	**5.6000e-004**	**0.0000**	**4.1928**	**4.1928**	**2.5000e-004**	**0.0000**	**4.1988**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Fugitive Dust					8.5400e-003	0.0000	8.5400e-003	1.2900e-003	0.0000	1.2900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0186	0.1835	0.1125	2.0000e-004		9.4700e-003	9.4700e-003		8.9000e-003	8.9000e-003	0.0000	17.6830	17.6830	4.2700e-003	0.0000	17.7898
Total	**0.0186**	**0.1835**	**0.1125**	**2.0000e-004**	**8.5400e-003**	**9.4700e-003**	**0.0180**	**1.2900e-003**	**8.9000e-003**	**0.0102**	**0.0000**	**17.6830**	**17.6830**	**4.2700e-003**	**0.0000**	**17.7898**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.7000e-004	0.0128	2.6100e-003	3.0000e-005	6.6000e-004	6.0000e-005	7.2000e-004	1.8000e-004	6.0000e-005	2.4000e-004	0.0000	3.0738	3.0738	2.0000e-004	0.0000	3.0787
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8000e-004	5.9000e-004	5.8400e-003	1.0000e-005	1.1800e-003	1.0000e-005	1.1900e-003	3.1000e-004	1.0000e-005	3.2000e-004	0.0000	1.1190	1.1190	5.0000e-005	0.0000	1.1201
Total	**1.1500e-003**	**0.0134**	**8.4500e-003**	**4.0000e-005**	**1.8400e-003**	**7.0000e-005**	**1.9100e-003**	**4.9000e-004**	**7.0000e-005**	**5.6000e-004**	**0.0000**	**4.1928**	**4.1928**	**2.5000e-004**	**0.0000**	**4.1988**

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0301	0.0000	0.0301	0.0166	0.0000	0.0166	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.8400e-003	0.0721	0.0329	6.0000e-005		3.7200e-003	3.7200e-003		3.4300e-003	3.4300e-003	0.0000	5.2298	5.2298	1.6500e-003	0.0000	5.2712

Total	**6.8400e-003**	**0.0721**	**0.0329**	**6.0000e-005**	**0.0301**	**3.7200e-003**	**0.0338**	**0.0166**	**3.4300e-003**	**0.0200**	**0.0000**	**5.2298**	**5.2298**	**1.6500e-003**	**0.0000**	**5.2712**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.7000e-004	3.5000e-004	3.5000e-003	1.0000e-005	7.1000e-004	1.0000e-005	7.1000e-004	1.9000e-004	1.0000e-005	1.9000e-004	0.0000	0.6714	0.6714	3.0000e-005	0.0000	0.6721
Total	**4.7000e-004**	**3.5000e-004**	**3.5000e-003**	**1.0000e-005**	**7.1000e-004**	**1.0000e-005**	**7.1000e-004**	**1.9000e-004**	**1.0000e-005**	**1.9000e-004**	**0.0000**	**0.6714**	**0.6714**	**3.0000e-005**	**0.0000**	**0.6721**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0301	0.0000	0.0301	0.0166	0.0000	0.0166	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.8400e-003	0.0721	0.0329	6.0000e-005		3.7200e-003	3.7200e-003		3.4300e-003	3.4300e-003	0.0000	5.2298	5.2298	1.6500e-003	0.0000	5.2712
Total	**6.8400e-003**	**0.0721**	**0.0329**	**6.0000e-005**	**0.0301**	**3.7200e-003**	**0.0338**	**0.0166**	**3.4300e-003**	**0.0200**	**0.0000**	**5.2298**	**5.2298**	**1.6500e-003**	**0.0000**	**5.2712**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.7000e-004	3.5000e-004	3.5000e-003	1.0000e-005	7.1000e-004	1.0000e-005	7.1000e-004	1.9000e-004	1.0000e-005	1.9000e-004	0.0000	0.6714	0.6714	3.0000e-005	0.0000	0.6721
Total	**4.7000e-004**	**3.5000e-004**	**3.5000e-003**	**1.0000e-005**	**7.1000e-004**	**1.0000e-005**	**7.1000e-004**	**1.9000e-004**	**1.0000e-005**	**1.9000e-004**	**0.0000**	**0.6714**	**0.6714**	**3.0000e-005**	**0.0000**	**0.6721**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0551	0.6241	0.3797	7.0000e-004		0.0282	0.0282		0.0259	0.0259	0.0000	63.1429	63.1429	0.0200	0.0000	63.6423
Total	**0.0551**	**0.6241**	**0.3797**	**7.0000e-004**	**0.1301**	**0.0282**	**0.1583**	**0.0540**	**0.0259**	**0.0799**	**0.0000**	**63.1429**	**63.1429**	**0.0200**	**0.0000**	**63.6423**

Unmitigated Construction Off-Site

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

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5600e-003	1.1700e-003	0.0117	2.0000e-005	2.3500e-003	2.0000e-005	2.3700e-003	6.3000e-004	2.0000e-005	6.5000e-004	0.0000	2.2379	2.2379	9.0000e-005	0.0000	2.2402
Total	**1.5600e-003**	**1.1700e-003**	**0.0117**	**2.0000e-005**	**2.3500e-003**	**2.0000e-005**	**2.3700e-003**	**6.3000e-004**	**2.0000e-005**	**6.5000e-004**	**0.0000**	**2.2379**	**2.2379**	**9.0000e-005**	**0.0000**	**2.2402**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0551	0.6241	0.3797	7.0000e-004		0.0282	0.0282		0.0259	0.0259	0.0000	63.1428	63.1428	0.0200	0.0000	63.6422
Total	**0.0551**	**0.6241**	**0.3797**	**7.0000e-004**	**0.1301**	**0.0282**	**0.1583**	**0.0540**	**0.0259**	**0.0799**	**0.0000**	**63.1428**	**63.1428**	**0.0200**	**0.0000**	**63.6422**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5600e-003	1.1700e-003	0.0117	2.0000e-005	2.3500e-003	2.0000e-005	2.3700e-003	6.3000e-004	2.0000e-005	6.5000e-004	0.0000	2.2379	2.2379	9.0000e-005	0.0000	2.2402
Total	**1.5600e-003**	**1.1700e-003**	**0.0117**	**2.0000e-005**	**2.3500e-003**	**2.0000e-005**	**2.3700e-003**	**6.3000e-004**	**2.0000e-005**	**6.5000e-004**	**0.0000**	**2.2379**	**2.2379**	**9.0000e-005**	**0.0000**	**2.2402**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1468	1.2022	1.0713	1.5900e-003		0.0775	0.0775		0.0730	0.0730	0.0000	136.9985	136.9985	0.0333	0.0000	137.8319
Total	**0.1468**	**1.2022**	**1.0713**	**1.5900e-003**		**0.0775**	**0.0775**		**0.0730**	**0.0730**	**0.0000**	**136.9985**	**136.9985**	**0.0333**	**0.0000**	**137.8319**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0303	0.7989	0.2117	1.6200e-003	0.0391	6.2200e-003	0.0453	0.0113	5.9500e-003	0.0173	0.0000	155.9716	155.9716	0.0104	0.0000	156.2306
Worker	0.1388	0.1047	1.0401	2.2100e-003	0.2098	1.7700e-003	0.2116	0.0558	1.6400e-003	0.0575	0.0000	199.4230	199.4230	8.0900e-003	0.0000	199.6253
Total	**0.1692**	**0.9036**	**1.2517**	**3.8300e-003**	**0.2489**	**7.9900e-003**	**0.2569**	**0.0671**	**7.5900e-003**	**0.0747**	**0.0000**	**355.3946**	**355.3946**	**0.0185**	**0.0000**	**355.8559**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1468	1.2022	1.0713	1.5900e-003		0.0775	0.0775		0.0730	0.0730	0.0000	136.9983	136.9983	0.0333	0.0000	137.8317
Total	**0.1468**	**1.2022**	**1.0713**	**1.5900e-003**		**0.0775**	**0.0775**		**0.0730**	**0.0730**	**0.0000**	**136.9983**	**136.9983**	**0.0333**	**0.0000**	**137.8317**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0303	0.7989	0.2117	1.6200e-003	0.0391	6.2200e-003	0.0453	0.0113	5.9500e-003	0.0173	0.0000	155.9716	155.9716	0.0104	0.0000	156.2306
Worker	0.1388	0.1047	1.0401	2.2100e-003	0.2098	1.7700e-003	0.2116	0.0558	1.6400e-003	0.0575	0.0000	199.4230	199.4230	8.0900e-003	0.0000	199.6253
Total	**0.1692**	**0.9036**	**1.2517**	**3.8300e-003**	**0.2489**	**7.9900e-003**	**0.2569**	**0.0671**	**7.5900e-003**	**0.0747**	**0.0000**	**355.3946**	**355.3946**	**0.0185**	**0.0000**	**355.8559**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0648	0.5414	0.5197	7.8000e-004		0.0330	0.0330		0.0311	0.0311	0.0000	66.5097	66.5097	0.0161	0.0000	66.9132

Total	**0.0648**	**0.5414**	**0.5197**	**7.8000e-004**		**0.0330**	**0.0330**		**0.0311**	**0.0311**	**0.0000**	**66.5097**	**66.5097**	**0.0161**	**0.0000**	**66.9132**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0117	0.3564	0.0900	7.9000e-004	0.0193	1.9000e-003	0.0212	5.5700e-003	1.8200e-003	7.3800e-003	0.0000	76.4655	76.4655	4.6800e-003	0.0000	76.5826
Worker	0.0628	0.0456	0.4586	1.0500e-003	0.1033	8.4000e-004	0.1042	0.0275	7.8000e-004	0.0283	0.0000	95.1925	95.1925	3.4900e-003	0.0000	95.2798
Total	**0.0745**	**0.4021**	**0.5486**	**1.8400e-003**	**0.1226**	**2.7400e-003**	**0.1253**	**0.0331**	**2.6000e-003**	**0.0357**	**0.0000**	**171.6580**	**171.6580**	**8.1700e-003**	**0.0000**	**171.8624**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0648	0.5414	0.5197	7.8000e-004		0.0330	0.0330		0.0311	0.0311	0.0000	66.5096	66.5096	0.0161	0.0000	66.9131
Total	**0.0648**	**0.5414**	**0.5197**	**7.8000e-004**		**0.0330**	**0.0330**		**0.0311**	**0.0311**	**0.0000**	**66.5096**	**66.5096**	**0.0161**	**0.0000**	**66.9131**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0117	0.3564	0.0900	7.9000e-004	0.0193	1.9000e-003	0.0212	5.5700e-003	1.8200e-003	7.3800e-003	0.0000	76.4655	76.4655	4.6800e-003	0.0000	76.5826
Worker	0.0628	0.0456	0.4586	1.0500e-003	0.1033	8.4000e-004	0.1042	0.0275	7.8000e-004	0.0283	0.0000	95.1925	95.1925	3.4900e-003	0.0000	95.2798
Total	**0.0745**	**0.4021**	**0.5486**	**1.8400e-003**	**0.1226**	**2.7400e-003**	**0.1253**	**0.0331**	**2.6000e-003**	**0.0357**	**0.0000**	**171.6580**	**171.6580**	**8.1700e-003**	**0.0000**	**171.8624**

3.6 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.7800e-003	0.0703	0.0733	1.1000e-004		3.7600e-003	3.7600e-003		3.4600e-003	3.4600e-003	0.0000	10.0141	10.0141	3.2400e-003	0.0000	10.0951
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.7800e-003**	**0.0703**	**0.0733**	**1.1000e-004**		**3.7600e-003**	**3.7600e-003**		**3.4600e-003**	**3.4600e-003**	**0.0000**	**10.0141**	**10.0141**	**3.2400e-003**	**0.0000**	**10.0951**

Unmitigated Construction Off-Site

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

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.2000e-004	5.2000e-004	5.2200e-003	1.0000e-005	1.1800e-003	1.0000e-005	1.1900e-003	3.1000e-004	1.0000e-005	3.2000e-004	0.0000	1.0844	1.0844	4.0000e-005	0.0000	1.0854
Total	**7.2000e-004**	**5.2000e-004**	**5.2200e-003**	**1.0000e-005**	**1.1800e-003**	**1.0000e-005**	**1.1900e-003**	**3.1000e-004**	**1.0000e-005**	**3.2000e-004**	**0.0000**	**1.0844**	**1.0844**	**4.0000e-005**	**0.0000**	**1.0854**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.7800e-003	0.0703	0.0733	1.1000e-004		3.7600e-003	3.7600e-003		3.4600e-003	3.4600e-003	0.0000	10.0141	10.0141	3.2400e-003	0.0000	10.0951
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.7800e-003**	**0.0703**	**0.0733**	**1.1000e-004**		**3.7600e-003**	**3.7600e-003**		**3.4600e-003**	**3.4600e-003**	**0.0000**	**10.0141**	**10.0141**	**3.2400e-003**	**0.0000**	**10.0951**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.2000e-004	5.2000e-004	5.2200e-003	1.0000e-005	1.1800e-003	1.0000e-005	1.1900e-003	3.1000e-004	1.0000e-005	3.2000e-004	0.0000	1.0844	1.0844	4.0000e-005	0.0000	1.0854
Total	**7.2000e-004**	**5.2000e-004**	**5.2200e-003**	**1.0000e-005**	**1.1800e-003**	**1.0000e-005**	**1.1900e-003**	**3.1000e-004**	**1.0000e-005**	**3.2000e-004**	**0.0000**	**1.0844**	**1.0844**	**4.0000e-005**	**0.0000**	**1.0854**

3.7 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.5691					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4200e-003	0.0168	0.0183	3.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	**1.5715**	**0.0168**	**0.0183**	**3.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.1100e-003**	**1.1100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.0000e-004**	**0.0000**	**2.5582**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5300e-003	1.8400e-003	0.0185	4.0000e-005	4.1600e-003	3.0000e-005	4.1900e-003	1.1100e-003	3.0000e-005	1.1400e-003	0.0000	3.8317	3.8317	1.4000e-004	0.0000	3.8352
Total	**2.5300e-003**	**1.8400e-003**	**0.0185**	**4.0000e-005**	**4.1600e-003**	**3.0000e-005**	**4.1900e-003**	**1.1100e-003**	**3.0000e-005**	**1.1400e-003**	**0.0000**	**3.8317**	**3.8317**	**1.4000e-004**	**0.0000**	**3.8352**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.5691					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4200e-003	0.0168	0.0183	3.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	**1.5715**	**0.0168**	**0.0183**	**3.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.1100e-003**	**1.1100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.0000e-004**	**0.0000**	**2.5582**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5300e-003	1.8400e-003	0.0185	4.0000e-005	4.1600e-003	3.0000e-005	4.1900e-003	1.1100e-003	3.0000e-005	1.1400e-003	0.0000	3.8317	3.8317	1.4000e-004	0.0000	3.8352
Total	**2.5300e-003**	**1.8400e-003**	**0.0185**	**4.0000e-005**	**4.1600e-003**	**3.0000e-005**	**4.1900e-003**	**1.1100e-003**	**3.0000e-005**	**1.1400e-003**	**0.0000**	**3.8317**	**3.8317**	**1.4000e-004**	**0.0000**	**3.8352**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Mitigated	0.6458	3.8104	5.2183	0.0190	1.7581	0.0142	1.7723	0.4727	0.0132	0.4859	0.0000	1,758.5269	1,758.5269	0.0783	0.0000	1,760.4837
Unmitigated	0.6458	3.8104	5.2183	0.0190	1.7581	0.0142	1.7723	0.4727	0.0132	0.4859	0.0000	1,758.5269	1,758.5269	0.0783	0.0000	1,760.4837

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,370.88	1,317.96	1207.08	3,094,689	3,094,689
Fast Food Restaurant with Drive Thru	2,989.07	4,350.15	3269.84	1,650,150	1,650,150
Parking Lot	0.00	0.00	0.00		
Total	4,359.95	5,668.11	4,476.92	4,744,839	4,744,839

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-...	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Fast Food Restaurant with Drive Thru	9.50	3.00	7.30	2.20	78.80	19.00	29	21	50
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.625329	0.031298	0.162135	0.089092	0.014618	0.004632	0.032111	0.030354	0.003196	0.001373	0.004305	0.000897	0.000662
Fast Food Restaurant with Drive Thru	0.625329	0.031298	0.162135	0.089092	0.014618	0.004632	0.032111	0.030354	0.003196	0.001373	0.004305	0.000897	0.000662
Parking Lot	0.625329	0.031298	0.162135	0.089092	0.014618	0.004632	0.032111	0.030354	0.003196	0.001373	0.004305	0.000897	0.000662

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	162.5899	162.5899	0.0163	3.3600e-003	163.9988
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	162.5899	162.5899	0.0163	3.3600e-003	163.9988
NaturalGas Mitigated	0.0161	0.1397	0.0758	8.8000e-004		0.0111	0.0111		0.0111	0.0111	0.0000	159.0782	159.0782	3.0500e-003	2.9200e-003	160.0236
NaturalGas Unmitigated	0.0161	0.1397	0.0758	8.8000e-004		0.0111	0.0111		0.0111	0.0111	0.0000	159.0782	159.0782	3.0500e-003	2.9200e-003	160.0236

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	2.17714e+006	0.0117	0.1003	0.0427	6.4000e-004		8.1100e-003	8.1100e-003		8.1100e-003	8.1100e-003	0.0000	116.1806	116.1806	2.2300e-003	2.1300e-003	116.8710
Fast Food Restaurant with Drive Thru	803872	4.3300e-003	0.0394	0.0331	2.4000e-004		2.9900e-003	2.9900e-003		2.9900e-003	2.9900e-003	0.0000	42.8977	42.8977	8.2000e-004	7.9000e-004	43.1526
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0161**	**0.1397**	**0.0758**	**8.8000e-004**		**0.0111**	**0.0111**		**0.0111**	**0.0111**	**0.0000**	**159.0782**	**159.0782**	**3.0500e-003**	**2.9200e-003**	**160.0236**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	2.17714e+006	0.0117	0.1003	0.0427	6.4000e-004		8.1100e-003	8.1100e-003		8.1100e-003	8.1100e-003	0.0000	116.1806	116.1806	2.2300e-003	2.1300e-003	116.8710
Fast Food Restaurant with Drive Thru	803872	4.3300e-003	0.0394	0.0331	2.4000e-004		2.9900e-003	2.9900e-003		2.9900e-003	2.9900e-003	0.0000	42.8977	42.8977	8.2000e-004	7.9000e-004	43.1526
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0161**	**0.1397**	**0.0758**	**8.8000e-004**		**0.0111**	**0.0111**		**0.0111**	**0.0111**	**0.0000**	**159.0782**	**159.0782**	**3.0500e-003**	**2.9200e-003**	**160.0236**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.04034e+006	136.8487	0.0137	2.8300e-003	138.0346
Fast Food Restaurant with Drive Thru	126528	16.6438	1.6600e-003	3.4000e-004	16.7880
Parking Lot	69160	9.0974	9.1000e-004	1.9000e-004	9.1763
Total		**162.5899**	**0.0163**	**3.3600e-003**	**163.9988**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.04034e+006	136.8487	0.0137	2.8300e-003	138.0346

Fast Food Restaurant with Drive Thru	126528	16.6438	1.6600e-003	3.4000e-004	16.7880
Parking Lot	69160	9.0974	9.1000e-004	1.9000e-004	9.1763
Total		**162.5899**	**0.0163**	**3.3600e-003**	**163.9988**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.0983	0.0332	2.0544	7.4000e-004		0.0405	0.0405		0.0405	0.0405	3.9304	13.1324	17.0628	0.0215	1.8000e-004	17.6553
Unmitigated	1.0983	0.0332	2.0544	7.4000e-004		0.0405	0.0405		0.0405	0.0405	3.9304	13.1324	17.0628	0.0215	1.8000e-004	17.6553

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1569					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8643					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Hearth	0.0208	0.0116	0.1836	6.4000e-004		0.0301	0.0301		0.0301	0.0301	3.9304	10.0670	13.9974	0.0186	1.8000e-004	14.5166
Landscaping	0.0562	0.0216	1.8707	1.0000e-004		0.0104	0.0104		0.0104	0.0104	0.0000	3.0654	3.0654	2.9300e-003	0.0000	3.1387
Total	**1.0983**	**0.0332**	**2.0544**	**7.4000e-004**		**0.0405**	**0.0405**		**0.0405**	**0.0405**	**3.9304**	**13.1324**	**17.0628**	**0.0215**	**1.8000e-004**	**17.6553**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1569					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8643					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0208	0.0116	0.1836	6.4000e-004		0.0301	0.0301		0.0301	0.0301	3.9304	10.0670	13.9974	0.0186	1.8000e-004	14.5166
Landscaping	0.0562	0.0216	1.8707	1.0000e-004		0.0104	0.0104		0.0104	0.0104	0.0000	3.0654	3.0654	2.9300e-003	0.0000	3.1387
Total	**1.0983**	**0.0332**	**2.0544**	**7.4000e-004**		**0.0405**	**0.0405**		**0.0405**	**0.0405**	**3.9304**	**13.1324**	**17.0628**	**0.0215**	**1.8000e-004**	**17.6553**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	23.5572	0.0232	0.0139	28.2792

Unmitigated	23.5572	0.0232	0.0139	28.2792

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	16.4188 / 10.351	22.2610	0.0216	0.0130	26.6680
Fast Food Restaurant with Drive Thru	1.18378 / 0.0755605	1.2962	1.5300e-003	9.3000e-004	1.6113
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**23.5572**	**0.0232**	**0.0139**	**28.2792**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	16.4188 / 10.351	22.2610	0.0216	0.0130	26.6680
Fast Food Restaurant with Drive Thru	1.18378 / 0.0755605	1.2962	1.5300e-003	9.3000e-004	1.6113
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**23.5572**	**0.0232**	**0.0139**	**28.2792**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	32.6491	1.9295	0.0000	80.8867
Unmitigated	32.6491	1.9295	0.0000	80.8867

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	115.92	23.5307	1.3906	0.0000	58.2963
Fast Food Restaurant with Drive Thru	44.92	9.1184	0.5389	0.0000	22.5903
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**32.6491**	**1.9295**	**0.0000**	**80.8867**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	115.92	23.5307	1.3906	0.0000	58.2963
Fast Food Restaurant with Drive Thru	44.92	9.1184	0.5389	0.0000	22.5903
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**32.6491**	**1.9295**	**0.0000**	**80.8867**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

325 Yolanda Avenue, Santa Rosa AQ - Sonoma-San Francisco County, Annual

325 Yolanda Avenue, Santa Rosa AQ

Sonoma-San Francisco County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	494.00	Space	0.00	197,600.00	0
Fast Food Restaurant with Drive Thru	3.87	1000sqft	2.00	3,867.00	0
Apartments Mid Rise	252.00	Dwelling Unit	8.40	214,167.00	721

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	75
Climate Zone	4			**Operational Year**	2035
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E 2020 Rates = 290

Land Use - apartments: 252 units; fast food: 3867-sf; parking: 410 for residential, 84 for in-n-out for a total of 494

Off-road Equipment -

Off-road Equipment - Client provided info

Off-road Equipment - Client provided info, 1 unit per equipment

Off-road Equipment - Client provided info, 1 scraper

Off-road Equipment - Client provided info

Off-road Equipment - Client provided info, 1 unit per equipment

Demolition - Client provided info

Vehicle Trips - Vehicle Trips - Fast Food: weekday 772.37, sat 1124.07, sun 844.92; Apartments: weekday 5.44, sat 5.23, sun 4.79, 3 mile trip length for In N Out

Woodstoves - all gas, no wood

Water And Wastewater - 100% aerobic

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	1,934.00	1,950.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	5,801.00	5,850.00
tblArchitecturalCoating	ConstArea_Parking	11,856.00	11,832.00
tblAreaCoating	Area_Nonresidential_Exterior	1934	1950
tblAreaCoating	Area_Nonresidential_Interior	5801	5850
tblAreaCoating	Area_Parking	11856	11832
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	37.80	80.64
tblFireplaces	NumberWood	42.84	0.00
tblGrading	AcresOfGrading	45.00	75.00
tblLandUse	LandUseSquareFeet	3,870.00	3,867.00
tblLandUse	LandUseSquareFeet	252,000.00	214,167.00
tblLandUse	LotAcreage	4.45	0.00
tblLandUse	LotAcreage	0.09	2.00
tblLandUse	LotAcreage	6.63	8.40
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	UsageHours	7.00	2.00
tblOffRoadEquipment	UsageHours	8.00	4.00

tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblSolidWaste	SolidWasteGenerationRate	44.58	44.92
tblTripsAndVMT	WorkerTripNumber	8.00	15.00
tblTripsAndVMT	WorkerTripNumber	5.00	18.00
tblTripsAndVMT	WorkerTripNumber	18.00	20.00
tblVehicleTrips	CC_TL	7.30	3.00
tblVehicleTrips	ST_TR	6.39	5.23
tblVehicleTrips	ST_TR	722.03	1,124.07
tblVehicleTrips	SU_TR	5.86	4.79
tblVehicleTrips	SU_TR	542.72	844.92
tblVehicleTrips	WD_TR	6.65	5.44
tblVehicleTrips	WD_TR	496.12	772.37
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	IndoorWaterUseRate	1,174,675.47	1,183,781.48
tblWater	OutdoorWaterUseRate	74,979.29	75,560.52
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.3996	3.0002	2.8718	6.4500e-003	0.4226	0.1269	0.5494	0.1402	0.1189	0.2591	0.0000	585.5509	585.5509	0.0781	0.0000	587.5021
2020	1.7208	1.0330	1.1835	2.8300e-003	0.1279	0.0407	0.1686	0.0345	0.0383	0.0728	0.0000	255.6512	255.6512	0.0279	0.0000	256.3495
Maximum	**1.7208**	**3.0002**	**2.8718**	**6.4500e-003**	**0.4226**	**0.1269**	**0.5494**	**0.1402**	**0.1189**	**0.2591**	**0.0000**	**585.5509**	**585.5509**	**0.0781**	**0.0000**	**587.5021**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.3996	3.0002	2.8718	6.4500e-003	0.4226	0.1269	0.5494	0.1402	0.1189	0.2591	0.0000	585.5506	585.5506	0.0781	0.0000	587.5018
2020	1.7208	1.0330	1.1835	2.8300e-003	0.1279	0.0407	0.1686	0.0345	0.0383	0.0728	0.0000	255.6511	255.6511	0.0279	0.0000	256.3494
Maximum	**1.7208**	**3.0002**	**2.8718**	**6.4500e-003**	**0.4226**	**0.1269**	**0.5494**	**0.1402**	**0.1189**	**0.2591**	**0.0000**	**585.5506**	**585.5506**	**0.0781**	**0.0000**	**587.5018**

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

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2019**	**3-31-2019**	1.0310	1.0310
2	**4-1-2019**	**6-30-2019**	0.7772	0.7772
3	**7-1-2019**	**9-30-2019**	0.7858	0.7858
4	**10-1-2019**	**12-31-2019**	0.8010	0.8010

5	**1-1-2020**	**3-31-2020**	0.7189	0.7189
6	**4-1-2020**	**6-30-2020**	1.3039	1.3039
7	**7-1-2020**	**9-30-2020**	0.7394	0.7394
		Highest	1.3039	1.3039

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.0982	0.0332	2.0527	7.4000e-004		0.0405	0.0405		0.0405	0.0405	3.9304	13.1324	17.0628	0.0215	1.8000e-004	17.6553
Energy	0.0161	0.1397	0.0758	8.8000e-004		0.0111	0.0111		0.0111	0.0111	0.0000	321.6681	321.6681	0.0193	6.2800e-003	324.0224
Mobile	0.4789	3.6289	4.0993	0.0178	1.7577	0.0103	1.7680	0.4725	9.5600e-003	0.4821	0.0000	1,657.3238	1,657.3238	0.0689	0.0000	1,659.0463
Waste						0.0000	0.0000		0.0000	0.0000	32.6491	0.0000	32.6491	1.9295	0.0000	80.8867
Water						0.0000	0.0000		0.0000	0.0000	6.2278	17.3294	23.5572	0.0232	0.0139	28.2792
Total	**1.5932**	**3.8018**	**6.2278**	**0.0194**	**1.7577**	**0.0618**	**1.8196**	**0.4725**	**0.0611**	**0.5336**	**42.8073**	**2,009.4537**	**2,052.2610**	**2.0624**	**0.0204**	**2,109.8899**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.0982	0.0332	2.0527	7.4000e-004		0.0405	0.0405		0.0405	0.0405	3.9304	13.1324	17.0628	0.0215	1.8000e-004	17.6553
Energy	0.0161	0.1397	0.0758	8.8000e-004		0.0111	0.0111		0.0111	0.0111	0.0000	321.6681	321.6681	0.0193	6.2800e-003	324.0224

Mobile	0.4789	3.6289	4.0993	0.0178	1.7577	0.0103	1.7680	0.4725	9.5600e-003	0.4821	0.0000	1,657.3238	1,657.3238	0.0689	0.0000	1,659.0463
Waste						0.0000	0.0000		0.0000	0.0000	32.6491	0.0000	32.6491	1.9295	0.0000	80.8867
Water						0.0000	0.0000		0.0000	0.0000	6.2278	17.3294	23.5572	0.0232	0.0139	28.2792
Total	**1.5932**	**3.8018**	**6.2278**	**0.0194**	**1.7577**	**0.0618**	**1.8196**	**0.4725**	**0.0611**	**0.5336**	**42.8073**	**2,009.4537**	**2,052.2610**	**2.0624**	**0.0204**	**2,109.8899**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2019	1/28/2019	5	20	
2	Site Preparation	Site Preparation	1/29/2019	2/11/2019	5	10	
3	Grading	Grading	2/12/2019	3/25/2019	5	30	
4	Building Construction	Building Construction	3/26/2019	5/18/2020	5	300	
5	Paving	Paving	5/19/2020	6/15/2020	5	20	
6	Architectural Coating	Architectural Coating	6/16/2020	7/13/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 0

Residential Indoor: 433,688; Residential Outdoor: 144,563; Non-Residential Indoor: 5,850; Non-Residential Outdoor: 1,950; Striped

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	1	8.00	158	0.38

Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	1	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	2.00	231	0.29
Building Construction	Forklifts	2	8.00	89	0.20
Building Construction	Generator Sets	1	4.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	4.00	130	0.42
Paving	Paving Equipment	2	4.00	132	0.36
Paving	Rollers	2	4.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	3	15.00	0.00	79.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	7	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	266.00	60.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	53.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					8.5400e-003	0.0000	8.5400e-003	1.2900e-003	0.0000	1.2900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0186	0.1835	0.1125	2.0000e-004		9.4800e-003	9.4800e-003		8.9000e-003	8.9000e-003	0.0000	17.6830	17.6830	4.2700e-003	0.0000	17.7898
Total	**0.0186**	**0.1835**	**0.1125**	**2.0000e-004**	**8.5400e-003**	**9.4800e-003**	**0.0180**	**1.2900e-003**	**8.9000e-003**	**0.0102**	**0.0000**	**17.6830**	**17.6830**	**4.2700e-003**	**0.0000**	**17.7898**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.7000e-004	0.0128	2.6100e-003	3.0000e-005	6.6000e-004	6.0000e-005	7.2000e-004	1.8000e-004	6.0000e-005	2.4000e-004	0.0000	3.0738	3.0738	2.0000e-004	0.0000	3.0787
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8000e-004	5.9000e-004	5.8400e-003	1.0000e-005	1.1800e-003	1.0000e-005	1.1900e-003	3.1000e-004	1.0000e-005	3.2000e-004	0.0000	1.1190	1.1190	5.0000e-005	0.0000	1.1201
Total	**1.1500e-003**	**0.0134**	**8.4500e-003**	**4.0000e-005**	**1.8400e-003**	**7.0000e-005**	**1.9100e-003**	**4.9000e-004**	**7.0000e-005**	**5.6000e-004**	**0.0000**	**4.1928**	**4.1928**	**2.5000e-004**	**0.0000**	**4.1988**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Fugitive Dust					8.5400e-003	0.0000	8.5400e-003	1.2900e-003	0.0000	1.2900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0186	0.1835	0.1125	2.0000e-004		9.4700e-003	9.4700e-003		8.9000e-003	8.9000e-003	0.0000	17.6830	17.6830	4.2700e-003	0.0000	17.7898
Total	**0.0186**	**0.1835**	**0.1125**	**2.0000e-004**	**8.5400e-003**	**9.4700e-003**	**0.0180**	**1.2900e-003**	**8.9000e-003**	**0.0102**	**0.0000**	**17.6830**	**17.6830**	**4.2700e-003**	**0.0000**	**17.7898**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.7000e-004	0.0128	2.6100e-003	3.0000e-005	6.6000e-004	6.0000e-005	7.2000e-004	1.8000e-004	6.0000e-005	2.4000e-004	0.0000	3.0738	3.0738	2.0000e-004	0.0000	3.0787
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8000e-004	5.9000e-004	5.8400e-003	1.0000e-005	1.1800e-003	1.0000e-005	1.1900e-003	3.1000e-004	1.0000e-005	3.2000e-004	0.0000	1.1190	1.1190	5.0000e-005	0.0000	1.1201
Total	**1.1500e-003**	**0.0134**	**8.4500e-003**	**4.0000e-005**	**1.8400e-003**	**7.0000e-005**	**1.9100e-003**	**4.9000e-004**	**7.0000e-005**	**5.6000e-004**	**0.0000**	**4.1928**	**4.1928**	**2.5000e-004**	**0.0000**	**4.1988**

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0301	0.0000	0.0301	0.0166	0.0000	0.0166	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.8400e-003	0.0721	0.0329	6.0000e-005		3.7200e-003	3.7200e-003		3.4300e-003	3.4300e-003	0.0000	5.2298	5.2298	1.6500e-003	0.0000	5.2712

Total	**6.8400e-003**	**0.0721**	**0.0329**	**6.0000e-005**	**0.0301**	**3.7200e-003**	**0.0338**	**0.0166**	**3.4300e-003**	**0.0200**	**0.0000**	**5.2298**	**5.2298**	**1.6500e-003**	**0.0000**	**5.2712**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.7000e-004	3.5000e-004	3.5000e-003	1.0000e-005	7.1000e-004	1.0000e-005	7.1000e-004	1.9000e-004	1.0000e-005	1.9000e-004	0.0000	0.6714	0.6714	3.0000e-005	0.0000	0.6721
Total	**4.7000e-004**	**3.5000e-004**	**3.5000e-003**	**1.0000e-005**	**7.1000e-004**	**1.0000e-005**	**7.1000e-004**	**1.9000e-004**	**1.0000e-005**	**1.9000e-004**	**0.0000**	**0.6714**	**0.6714**	**3.0000e-005**	**0.0000**	**0.6721**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0301	0.0000	0.0301	0.0166	0.0000	0.0166	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.8400e-003	0.0721	0.0329	6.0000e-005		3.7200e-003	3.7200e-003		3.4300e-003	3.4300e-003	0.0000	5.2298	5.2298	1.6500e-003	0.0000	5.2712
Total	**6.8400e-003**	**0.0721**	**0.0329**	**6.0000e-005**	**0.0301**	**3.7200e-003**	**0.0338**	**0.0166**	**3.4300e-003**	**0.0200**	**0.0000**	**5.2298**	**5.2298**	**1.6500e-003**	**0.0000**	**5.2712**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.7000e-004	3.5000e-004	3.5000e-003	1.0000e-005	7.1000e-004	1.0000e-005	7.1000e-004	1.9000e-004	1.0000e-005	1.9000e-004	0.0000	0.6714	0.6714	3.0000e-005	0.0000	0.6721
Total	**4.7000e-004**	**3.5000e-004**	**3.5000e-003**	**1.0000e-005**	**7.1000e-004**	**1.0000e-005**	**7.1000e-004**	**1.9000e-004**	**1.0000e-005**	**1.9000e-004**	**0.0000**	**0.6714**	**0.6714**	**3.0000e-005**	**0.0000**	**0.6721**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0551	0.6241	0.3797	7.0000e-004		0.0282	0.0282		0.0259	0.0259	0.0000	63.1429	63.1429	0.0200	0.0000	63.6423
Total	**0.0551**	**0.6241**	**0.3797**	**7.0000e-004**	**0.1301**	**0.0282**	**0.1583**	**0.0540**	**0.0259**	**0.0799**	**0.0000**	**63.1429**	**63.1429**	**0.0200**	**0.0000**	**63.6423**

Unmitigated Construction Off-Site

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

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5600e-003	1.1700e-003	0.0117	2.0000e-005	2.3500e-003	2.0000e-005	2.3700e-003	6.3000e-004	2.0000e-005	6.5000e-004	0.0000	2.2379	2.2379	9.0000e-005	0.0000	2.2402
Total	**1.5600e-003**	**1.1700e-003**	**0.0117**	**2.0000e-005**	**2.3500e-003**	**2.0000e-005**	**2.3700e-003**	**6.3000e-004**	**2.0000e-005**	**6.5000e-004**	**0.0000**	**2.2379**	**2.2379**	**9.0000e-005**	**0.0000**	**2.2402**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0551	0.6241	0.3797	7.0000e-004		0.0282	0.0282		0.0259	0.0259	0.0000	63.1428	63.1428	0.0200	0.0000	63.6422
Total	**0.0551**	**0.6241**	**0.3797**	**7.0000e-004**	**0.1301**	**0.0282**	**0.1583**	**0.0540**	**0.0259**	**0.0799**	**0.0000**	**63.1428**	**63.1428**	**0.0200**	**0.0000**	**63.6422**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5600e-003	1.1700e-003	0.0117	2.0000e-005	2.3500e-003	2.0000e-005	2.3700e-003	6.3000e-004	2.0000e-005	6.5000e-004	0.0000	2.2379	2.2379	9.0000e-005	0.0000	2.2402
Total	**1.5600e-003**	**1.1700e-003**	**0.0117**	**2.0000e-005**	**2.3500e-003**	**2.0000e-005**	**2.3700e-003**	**6.3000e-004**	**2.0000e-005**	**6.5000e-004**	**0.0000**	**2.2379**	**2.2379**	**9.0000e-005**	**0.0000**	**2.2402**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1468	1.2022	1.0713	1.5900e-003		0.0775	0.0775		0.0730	0.0730	0.0000	136.9985	136.9985	0.0333	0.0000	137.8319
Total	**0.1468**	**1.2022**	**1.0713**	**1.5900e-003**		**0.0775**	**0.0775**		**0.0730**	**0.0730**	**0.0000**	**136.9985**	**136.9985**	**0.0333**	**0.0000**	**137.8319**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0303	0.7989	0.2117	1.6200e-003	0.0391	6.2200e-003	0.0453	0.0113	5.9500e-003	0.0173	0.0000	155.9716	155.9716	0.0104	0.0000	156.2306
Worker	0.1388	0.1047	1.0401	2.2100e-003	0.2098	1.7700e-003	0.2116	0.0558	1.6400e-003	0.0575	0.0000	199.4230	199.4230	8.0900e-003	0.0000	199.6253
Total	**0.1692**	**0.9036**	**1.2517**	**3.8300e-003**	**0.2489**	**7.9900e-003**	**0.2569**	**0.0671**	**7.5900e-003**	**0.0747**	**0.0000**	**355.3946**	**355.3946**	**0.0185**	**0.0000**	**355.8559**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1468	1.2022	1.0713	1.5900e-003		0.0775	0.0775		0.0730	0.0730	0.0000	136.9983	136.9983	0.0333	0.0000	137.8317
Total	**0.1468**	**1.2022**	**1.0713**	**1.5900e-003**		**0.0775**	**0.0775**		**0.0730**	**0.0730**	**0.0000**	**136.9983**	**136.9983**	**0.0333**	**0.0000**	**137.8317**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0303	0.7989	0.2117	1.6200e-003	0.0391	6.2200e-003	0.0453	0.0113	5.9500e-003	0.0173	0.0000	155.9716	155.9716	0.0104	0.0000	156.2306
Worker	0.1388	0.1047	1.0401	2.2100e-003	0.2098	1.7700e-003	0.2116	0.0558	1.6400e-003	0.0575	0.0000	199.4230	199.4230	8.0900e-003	0.0000	199.6253
Total	**0.1692**	**0.9036**	**1.2517**	**3.8300e-003**	**0.2489**	**7.9900e-003**	**0.2569**	**0.0671**	**7.5900e-003**	**0.0747**	**0.0000**	**355.3946**	**355.3946**	**0.0185**	**0.0000**	**355.8559**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0648	0.5414	0.5197	7.8000e-004		0.0330	0.0330		0.0311	0.0311	0.0000	66.5097	66.5097	0.0161	0.0000	66.9132

Total	**0.0648**	**0.5414**	**0.5197**	**7.8000e-004**		**0.0330**	**0.0330**		**0.0311**	**0.0311**	**0.0000**	**66.5097**	**66.5097**	**0.0161**	**0.0000**	**66.9132**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0117	0.3564	0.0900	7.9000e-004	0.0193	1.9000e-003	0.0212	5.5700e-003	1.8200e-003	7.3800e-003	0.0000	76.4655	76.4655	4.6800e-003	0.0000	76.5826
Worker	0.0628	0.0456	0.4586	1.0500e-003	0.1033	8.4000e-004	0.1042	0.0275	7.8000e-004	0.0283	0.0000	95.1925	95.1925	3.4900e-003	0.0000	95.2798
Total	**0.0745**	**0.4021**	**0.5486**	**1.8400e-003**	**0.1226**	**2.7400e-003**	**0.1253**	**0.0331**	**2.6000e-003**	**0.0357**	**0.0000**	**171.6580**	**171.6580**	**8.1700e-003**	**0.0000**	**171.8624**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0648	0.5414	0.5197	7.8000e-004		0.0330	0.0330		0.0311	0.0311	0.0000	66.5096	66.5096	0.0161	0.0000	66.9131
Total	**0.0648**	**0.5414**	**0.5197**	**7.8000e-004**		**0.0330**	**0.0330**		**0.0311**	**0.0311**	**0.0000**	**66.5096**	**66.5096**	**0.0161**	**0.0000**	**66.9131**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0117	0.3564	0.0900	7.9000e-004	0.0193	1.9000e-003	0.0212	5.5700e-003	1.8200e-003	7.3800e-003	0.0000	76.4655	76.4655	4.6800e-003	0.0000	76.5826
Worker	0.0628	0.0456	0.4586	1.0500e-003	0.1033	8.4000e-004	0.1042	0.0275	7.8000e-004	0.0283	0.0000	95.1925	95.1925	3.4900e-003	0.0000	95.2798
Total	**0.0745**	**0.4021**	**0.5486**	**1.8400e-003**	**0.1226**	**2.7400e-003**	**0.1253**	**0.0331**	**2.6000e-003**	**0.0357**	**0.0000**	**171.6580**	**171.6580**	**8.1700e-003**	**0.0000**	**171.8624**

3.6 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.7800e-003	0.0703	0.0733	1.1000e-004		3.7600e-003	3.7600e-003		3.4600e-003	3.4600e-003	0.0000	10.0141	10.0141	3.2400e-003	0.0000	10.0951
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.7800e-003**	**0.0703**	**0.0733**	**1.1000e-004**		**3.7600e-003**	**3.7600e-003**		**3.4600e-003**	**3.4600e-003**	**0.0000**	**10.0141**	**10.0141**	**3.2400e-003**	**0.0000**	**10.0951**

Unmitigated Construction Off-Site

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

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.2000e-004	5.2000e-004	5.2200e-003	1.0000e-005	1.1800e-003	1.0000e-005	1.1900e-003	3.1000e-004	1.0000e-005	3.2000e-004	0.0000	1.0844	1.0844	4.0000e-005	0.0000	1.0854
Total	**7.2000e-004**	**5.2000e-004**	**5.2200e-003**	**1.0000e-005**	**1.1800e-003**	**1.0000e-005**	**1.1900e-003**	**3.1000e-004**	**1.0000e-005**	**3.2000e-004**	**0.0000**	**1.0844**	**1.0844**	**4.0000e-005**	**0.0000**	**1.0854**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.7800e-003	0.0703	0.0733	1.1000e-004		3.7600e-003	3.7600e-003		3.4600e-003	3.4600e-003	0.0000	10.0141	10.0141	3.2400e-003	0.0000	10.0951
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.7800e-003**	**0.0703**	**0.0733**	**1.1000e-004**		**3.7600e-003**	**3.7600e-003**		**3.4600e-003**	**3.4600e-003**	**0.0000**	**10.0141**	**10.0141**	**3.2400e-003**	**0.0000**	**10.0951**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.2000e-004	5.2000e-004	5.2200e-003	1.0000e-005	1.1800e-003	1.0000e-005	1.1900e-003	3.1000e-004	1.0000e-005	3.2000e-004	0.0000	1.0844	1.0844	4.0000e-005	0.0000	1.0854
Total	**7.2000e-004**	**5.2000e-004**	**5.2200e-003**	**1.0000e-005**	**1.1800e-003**	**1.0000e-005**	**1.1900e-003**	**3.1000e-004**	**1.0000e-005**	**3.2000e-004**	**0.0000**	**1.0844**	**1.0844**	**4.0000e-005**	**0.0000**	**1.0854**

3.7 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.5691					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4200e-003	0.0168	0.0183	3.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	**1.5715**	**0.0168**	**0.0183**	**3.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.1100e-003**	**1.1100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.0000e-004**	**0.0000**	**2.5582**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5300e-003	1.8400e-003	0.0185	4.0000e-005	4.1600e-003	3.0000e-005	4.1900e-003	1.1100e-003	3.0000e-005	1.1400e-003	0.0000	3.8317	3.8317	1.4000e-004	0.0000	3.8352
Total	**2.5300e-003**	**1.8400e-003**	**0.0185**	**4.0000e-005**	**4.1600e-003**	**3.0000e-005**	**4.1900e-003**	**1.1100e-003**	**3.0000e-005**	**1.1400e-003**	**0.0000**	**3.8317**	**3.8317**	**1.4000e-004**	**0.0000**	**3.8352**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.5691					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4200e-003	0.0168	0.0183	3.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	**1.5715**	**0.0168**	**0.0183**	**3.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.1100e-003**	**1.1100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.0000e-004**	**0.0000**	**2.5582**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5300e-003	1.8400e-003	0.0185	4.0000e-005	4.1600e-003	3.0000e-005	4.1900e-003	1.1100e-003	3.0000e-005	1.1400e-003	0.0000	3.8317	3.8317	1.4000e-004	0.0000	3.8352
Total	**2.5300e-003**	**1.8400e-003**	**0.0185**	**4.0000e-005**	**4.1600e-003**	**3.0000e-005**	**4.1900e-003**	**1.1100e-003**	**3.0000e-005**	**1.1400e-003**	**0.0000**	**3.8317**	**3.8317**	**1.4000e-004**	**0.0000**	**3.8352**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Mitigated	0.4789	3.6289	4.0993	0.0178	1.7577	0.0103	1.7680	0.4725	9.5600e-003	0.4821	0.0000	1,657.3238	1,657.3238	0.0689	0.0000	1,659.0463
Unmitigated	0.4789	3.6289	4.0993	0.0178	1.7577	0.0103	1.7680	0.4725	9.5600e-003	0.4821	0.0000	1,657.3238	1,657.3238	0.0689	0.0000	1,659.0463

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,370.88	1,317.96	1207.08	3,094,689	3,094,689
Fast Food Restaurant with Drive Thru	2,989.07	4,350.15	3269.84	1,650,150	1,650,150
Parking Lot	0.00	0.00	0.00		
Total	4,359.95	5,668.11	4,476.92	4,744,839	4,744,839

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-...	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Fast Food Restaurant with Drive Thru	9.50	3.00	7.30	2.20	78.80	19.00	29	21	50
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.631952	0.030215	0.161142	0.086119	0.011578	0.004283	0.033032	0.031556	0.003254	0.001262	0.004128	0.000903	0.000577
Fast Food Restaurant with Drive Thru	0.631952	0.030215	0.161142	0.086119	0.011578	0.004283	0.033032	0.031556	0.003254	0.001262	0.004128	0.000903	0.000577
Parking Lot	0.631952	0.030215	0.161142	0.086119	0.011578	0.004283	0.033032	0.031556	0.003254	0.001262	0.004128	0.000903	0.000577

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	162.5899	162.5899	0.0163	3.3600e-003	163.9988
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	162.5899	162.5899	0.0163	3.3600e-003	163.9988
NaturalGas Mitigated	0.0161	0.1397	0.0758	8.8000e-004		0.0111	0.0111		0.0111	0.0111	0.0000	159.0782	159.0782	3.0500e-003	2.9200e-003	160.0236
NaturalGas Unmitigated	0.0161	0.1397	0.0758	8.8000e-004		0.0111	0.0111		0.0111	0.0111	0.0000	159.0782	159.0782	3.0500e-003	2.9200e-003	160.0236

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	2.17714e+006	0.0117	0.1003	0.0427	6.4000e-004		8.1100e-003	8.1100e-003		8.1100e-003	8.1100e-003	0.0000	116.1806	116.1806	2.2300e-003	2.1300e-003	116.8710
Fast Food Restaurant with Drive Thru	803872	4.3300e-003	0.0394	0.0331	2.4000e-004		2.9900e-003	2.9900e-003		2.9900e-003	2.9900e-003	0.0000	42.8977	42.8977	8.2000e-004	7.9000e-004	43.1526
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0161**	**0.1397**	**0.0758**	**8.8000e-004**		**0.0111**	**0.0111**		**0.0111**	**0.0111**	**0.0000**	**159.0782**	**159.0782**	**3.0500e-003**	**2.9200e-003**	**160.0236**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	2.17714e+006	0.0117	0.1003	0.0427	6.4000e-004		8.1100e-003	8.1100e-003		8.1100e-003	8.1100e-003	0.0000	116.1806	116.1806	2.2300e-003	2.1300e-003	116.8710
Fast Food Restaurant with Drive Thru	803872	4.3300e-003	0.0394	0.0331	2.4000e-004		2.9900e-003	2.9900e-003		2.9900e-003	2.9900e-003	0.0000	42.8977	42.8977	8.2000e-004	7.9000e-004	43.1526
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0161**	**0.1397**	**0.0758**	**8.8000e-004**		**0.0111**	**0.0111**		**0.0111**	**0.0111**	**0.0000**	**159.0782**	**159.0782**	**3.0500e-003**	**2.9200e-003**	**160.0236**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.04034e+006	136.8487	0.0137	2.8300e-003	138.0346
Fast Food Restaurant with Drive Thru	126528	16.6438	1.6600e-003	3.4000e-004	16.7880
Parking Lot	69160	9.0974	9.1000e-004	1.9000e-004	9.1763
Total		**162.5899**	**0.0163**	**3.3600e-003**	**163.9988**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.04034e+006	136.8487	0.0137	2.8300e-003	138.0346

Fast Food Restaurant with Drive Thru	126528	16.6438	1.6600e-003	3.4000e-004	16.7880
Parking Lot	69160	9.0974	9.1000e-004	1.9000e-004	9.1763
Total		**162.5899**	**0.0163**	**3.3600e-003**	**163.9988**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.0982	0.0332	2.0527	7.4000e-004		0.0405	0.0405		0.0405	0.0405	3.9304	13.1324	17.0628	0.0215	1.8000e-004	17.6553
Unmitigated	1.0982	0.0332	2.0527	7.4000e-004		0.0405	0.0405		0.0405	0.0405	3.9304	13.1324	17.0628	0.0215	1.8000e-004	17.6553

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1569					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8643					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Hearth	0.0208	0.0116	0.1836	6.4000e-004		0.0301	0.0301		0.0301	0.0301	3.9304	10.0670	13.9974	0.0186	1.8000e-004	14.5166
Landscaping	0.0562	0.0216	1.8691	1.0000e-004		0.0104	0.0104		0.0104	0.0104	0.0000	3.0654	3.0654	2.9300e-003	0.0000	3.1387
Total	**1.0982**	**0.0332**	**2.0527**	**7.4000e-004**		**0.0405**	**0.0405**		**0.0405**	**0.0405**	**3.9304**	**13.1324**	**17.0628**	**0.0215**	**1.8000e-004**	**17.6552**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1569					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8643					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0208	0.0116	0.1836	6.4000e-004		0.0301	0.0301		0.0301	0.0301	3.9304	10.0670	13.9974	0.0186	1.8000e-004	14.5166
Landscaping	0.0562	0.0216	1.8691	1.0000e-004		0.0104	0.0104		0.0104	0.0104	0.0000	3.0654	3.0654	2.9300e-003	0.0000	3.1387
Total	**1.0982**	**0.0332**	**2.0527**	**7.4000e-004**		**0.0405**	**0.0405**		**0.0405**	**0.0405**	**3.9304**	**13.1324**	**17.0628**	**0.0215**	**1.8000e-004**	**17.6552**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	23.5572	0.0232	0.0139	28.2792

Unmitigated	23.5572	0.0232	0.0139	28.2792

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	16.4188 / 10.351	22.2610	0.0216	0.0130	26.6680
Fast Food Restaurant with Drive Thru	1.18378 / 0.0755605	1.2962	1.5300e-003	9.3000e-004	1.6113
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**23.5572**	**0.0232**	**0.0139**	**28.2792**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	16.4188 / 10.351	22.2610	0.0216	0.0130	26.6680
Fast Food Restaurant with Drive Thru	1.18378 / 0.0755605	1.2962	1.5300e-003	9.3000e-004	1.6113
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**23.5572**	**0.0232**	**0.0139**	**28.2792**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	32.6491	1.9295	0.0000	80.8867
Unmitigated	32.6491	1.9295	0.0000	80.8867

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	115.92	23.5307	1.3906	0.0000	58.2963
Fast Food Restaurant with Drive Thru	44.92	9.1184	0.5389	0.0000	22.5903
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**32.6491**	**1.9295**	**0.0000**	**80.8867**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	115.92	23.5307	1.3906	0.0000	58.2963
Fast Food Restaurant with Drive Thru	44.92	9.1184	0.5389	0.0000	22.5903
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**32.6491**	**1.9295**	**0.0000**	**80.8867**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

18-146 325 Yolanda Existing Land Use - Sonoma-San Francisco County, Annual

18-146 325 Yolanda Existing Land Use

Sonoma-San Francisco County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	17.36	1000sqft	10.40	17,360.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	75
Climate Zone	4			**Operational Year**	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E 2020 rate 290

Land Use - Existing use is general light industry

Construction Phase - no construction, existing land use

Off-road Equipment - no construction equipment

Vehicle Trips - no existing land use trip gen

Water And Wastewater - 100% aerobic

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	1.00
tblConstructionPhase	PhaseEndDate	2/11/2019	1/29/2019

tblLandUse	LotAcreage	0.40	10.40
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblTripsAndVMT	WorkerTripNumber	0.00	18.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	SepticTankPercent	10.33	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	5.0000e-005	4.0000e-005	3.5000e-004	0.0000	7.0000e-005	0.0000	7.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0671	0.0671	0.0000	0.0000	0.0672
Maximum	**5.0000e-005**	**4.0000e-005**	**3.5000e-004**	**0.0000**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0671**	**0.0671**	**0.0000**	**0.0000**	**0.0672**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Year	tons/yr										MT/yr					
2019	5.0000e-005	4.0000e-005	3.5000e-004	0.0000	7.0000e-005	0.0000	7.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0671	0.0671	0.0000	0.0000	0.0672
Maximum	**5.0000e-005**	**4.0000e-005**	**3.5000e-004**	**0.0000**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0671**	**0.0671**	**0.0000**	**0.0000**	**0.0672**

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

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2019**	**3-31-2019**	0.0001	0.0001
		Highest	0.0001	0.0001

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0769	0.0000	1.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.1000e-004	3.1000e-004	0.0000	0.0000	3.3000e-004
Energy	2.4700e-003	0.0225	0.0189	1.3000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	43.3006	43.3006	2.3500e-003	8.4000e-004	43.6093
Mobile	0.0334	0.1758	0.4037	1.2400e-003	0.0990	1.2800e-003	0.1003	0.0267	1.2100e-003	0.0279	0.0000	114.0846	114.0846	4.8500e-003	0.0000	114.2059
Waste						0.0000	0.0000		0.0000	0.0000	4.3704	0.0000	4.3704	0.2583	0.0000	10.8275
Water						0.0000	0.0000		0.0000	0.0000	1.4203	2.8574	4.2778	5.1700e-003	3.1500e-003	5.3452
Total	**0.1128**	**0.1983**	**0.4227**	**1.3700e-003**	**0.0990**	**2.9900e-003**	**0.1020**	**0.0267**	**2.9200e-003**	**0.0296**	**5.7907**	**160.2429**	**166.0336**	**0.2707**	**3.9900e-003**	**173.9881**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0769	0.0000	1.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.1000e-004	3.1000e-004	0.0000	0.0000	3.3000e-004
Energy	2.4700e-003	0.0225	0.0189	1.3000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	43.3006	43.3006	2.3500e-003	8.4000e-004	43.6093
Mobile	0.0334	0.1758	0.4037	1.2400e-003	0.0990	1.2800e-003	0.1003	0.0267	1.2100e-003	0.0279	0.0000	114.0846	114.0846	4.8500e-003	0.0000	114.2059
Waste						0.0000	0.0000		0.0000	0.0000	4.3704	0.0000	4.3704	0.2583	0.0000	10.8275
Water						0.0000	0.0000		0.0000	0.0000	1.4203	2.8574	4.2778	5.1700e-003	3.1500e-003	5.3452
Total	**0.1128**	**0.1983**	**0.4227**	**1.3700e-003**	**0.0990**	**2.9900e-003**	**0.1020**	**0.0267**	**2.9200e-003**	**0.0296**	**5.7907**	**160.2429**	**166.0336**	**0.2707**	**3.9900e-003**	**173.9881**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/29/2019	1/29/2019	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Site Preparation	Rubber Tired Dozers	0	0.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	0	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2019

Unmitigated Construction On-Site

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

Unmitigated Construction Off-Site

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

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-005	4.0000e-005	3.5000e-004	0.0000	7.0000e-005	0.0000	7.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0671	0.0671	0.0000	0.0000	0.0672
Total	**5.0000e-005**	**4.0000e-005**	**3.5000e-004**	**0.0000**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0671**	**0.0671**	**0.0000**	**0.0000**	**0.0672**

Mitigated Construction On-Site

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

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-005	4.0000e-005	3.5000e-004	0.0000	7.0000e-005	0.0000	7.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0671	0.0671	0.0000	0.0000	0.0672
Total	**5.0000e-005**	**4.0000e-005**	**3.5000e-004**	**0.0000**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0671**	**0.0671**	**0.0000**	**0.0000**	**0.0672**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0334	0.1758	0.4037	1.2400e-003	0.0990	1.2800e-003	0.1003	0.0267	1.2100e-003	0.0279	0.0000	114.0846	114.0846	4.8500e-003	0.0000	114.2059
Unmitigated	0.0334	0.1758	0.4037	1.2400e-003	0.0990	1.2800e-003	0.1003	0.0267	1.2100e-003	0.0279	0.0000	114.0846	114.0846	4.8500e-003	0.0000	114.2059

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	121.00	22.92	11.80	266,808	266,808
Total	121.00	22.92	11.80	266,808	266,808

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.578299	0.039453	0.169996	0.109068	0.028307	0.006716	0.029274	0.026666	0.003071	0.001838	0.005325	0.000874	0.001112

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	18.8623	18.8623	1.8900e-003	3.9000e-004	19.0257
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	18.8623	18.8623	1.8900e-003	3.9000e-004	19.0257
NaturalGas Mitigated	2.4700e-003	0.0225	0.0189	1.3000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	24.4383	24.4383	4.7000e-004	4.5000e-004	24.5835
NaturalGas Unmitigated	2.4700e-003	0.0225	0.0189	1.3000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	24.4383	24.4383	4.7000e-004	4.5000e-004	24.5835

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	457957	2.4700e-003	0.0225	0.0189	1.3000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	24.4383	24.4383	4.7000e-004	4.5000e-004	24.5835
Total		**2.4700e-003**	**0.0225**	**0.0189**	**1.3000e-004**		**1.7100e-003**	**1.7100e-003**		**1.7100e-003**	**1.7100e-003**	**0.0000**	**24.4383**	**24.4383**	**4.7000e-004**	**4.5000e-004**	**24.5835**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	457957	2.4700e-003	0.0225	0.0189	1.3000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	24.4383	24.4383	4.7000e-004	4.5000e-004	24.5835
Total		**2.4700e-003**	**0.0225**	**0.0189**	**1.3000e-004**		**1.7100e-003**	**1.7100e-003**		**1.7100e-003**	**1.7100e-003**	**0.0000**	**24.4383**	**24.4383**	**4.7000e-004**	**4.5000e-004**	**24.5835**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	143394	18.8623	1.8900e-003	3.9000e-004	19.0257
Total		**18.8623**	**1.8900e-003**	**3.9000e-004**	**19.0257**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e

Land Use	kWh/yr	MT/yr			
General Light Industry	143394	18.8623	1.8900e-003	3.9000e-004	19.0257
Total		**18.8623**	**1.8900e-003**	**3.9000e-004**	**19.0257**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0769	0.0000	1.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.1000e-004	3.1000e-004	0.0000	0.0000	3.3000e-004
Unmitigated	0.0769	0.0000	1.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.1000e-004	3.1000e-004	0.0000	0.0000	3.3000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	9.0500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Consumer Products	0.0678					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.1000e-004	3.1000e-004	0.0000	0.0000	3.3000e-004
Total	**0.0769**	**0.0000**	**1.6000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**3.1000e-004**	**3.1000e-004**	**0.0000**	**0.0000**	**3.3000e-004**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	9.0500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0678					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.1000e-004	3.1000e-004	0.0000	0.0000	3.3000e-004
Total	**0.0769**	**0.0000**	**1.6000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**3.1000e-004**	**3.1000e-004**	**0.0000**	**0.0000**	**3.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	4.2778	5.1700e-003	3.1500e-003	5.3452
Unmitigated	4.2778	5.1700e-003	3.1500e-003	5.3452

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	4.0145 / 0	4.2778	5.1700e-003	3.1500e-003	5.3452
Total		**4.2778**	**5.1700e-003**	**3.1500e-003**	**5.3452**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	4.0145 / 0	4.2778	5.1700e-003	3.1500e-003	5.3452
Total		**4.2778**	**5.1700e-003**	**3.1500e-003**	**5.3452**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	4.3704	0.2583	0.0000	10.8275
Unmitigated	4.3704	0.2583	0.0000	10.8275

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	21.53	4.3704	0.2583	0.0000	10.8275
Total		**4.3704**	**0.2583**	**0.0000**	**10.8275**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			

General Light Industry	21.53	4.3704	0.2583	0.0000	10.8275
Total		**4.3704**	**0.2583**	**0.0000**	**10.8275**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

325 Yolanda Avenue, Santa Rosa TAC - Sonoma-San Francisco County, Annual

325 Yolanda Avenue, Santa Rosa TAC

Sonoma-San Francisco County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	494.00	Space	0.00	197,600.00	0
Fast Food Restaurant with Drive Thru	3.87	1000sqft	2.00	3,867.00	0
Apartments Mid Rise	252.00	Dwelling Unit	8.40	214,167.00	721

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	75
Climate Zone	4			**Operational Year**	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E 2020 Rates = 290

Land Use - apartments: 252 units; fast food: 3867-sf; parking: 410 for residential, 84 for in-n-out for a total of 494

Off-road Equipment -

Off-road Equipment - Client provided info

Off-road Equipment - Client provided info, 1 unit per equipment

Off-road Equipment - Client provided info, 1 scraper

Off-road Equipment - Client provided info

Off-road Equipment - Client provided info, 1 unit per equipment

Demolition - Client provided info

Vehicle Trips - Vehicle Trips - Fast Food: weekday 772.37, sat 1124.07, sun 844.92; Apartments: weekday 5.44, sat 5.23, sun 4.79

Woodstoves - all gas, no wood

Water And Wastewater - 100% aerobic

Trips and VMT - TAC Trip length 1 mile

Construction Off-road Equipment Mitigation - BMPS, tier 2 lvl 3

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	1,934.00	1,950.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	5,801.00	5,850.00
tblArchitecturalCoating	ConstArea_Parking	11,856.00	11,832.00
tblAreaCoating	Area_Nonresidential_Exterior	1934	1950
tblAreaCoating	Area_Nonresidential_Interior	5801	5850
tblAreaCoating	Area_Parking	11856	11832
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	37.80	80.64
tblFireplaces	NumberWood	42.84	0.00
tblGrading	AcresOfGrading	45.00	75.00

tblLandUse	LandUseSquareFeet	3,870.00	3,867.00
tblLandUse	LandUseSquareFeet	252,000.00	214,167.00
tblLandUse	LotAcreage	4.45	0.00
tblLandUse	LotAcreage	0.09	2.00
tblLandUse	LotAcreage	6.63	8.40
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	UsageHours	7.00	2.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblSolidWaste	SolidWasteGenerationRate	44.58	44.92
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00

tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblVehicleTrips	ST_TR	6.39	5.23
tblVehicleTrips	ST_TR	722.03	1,124.07
tblVehicleTrips	SU_TR	5.86	4.79
tblVehicleTrips	SU_TR	542.72	844.92
tblVehicleTrips	WD_TR	6.65	5.44
tblVehicleTrips	WD_TR	496.12	772.37
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPerce	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPerce	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPerce	2.21	0.00
tblWater	IndoorWaterUseRate	1,174,675.47	1,183,781.48
tblWater	OutdoorWaterUseRate	74,979.29	75,560.52
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.2887	2.5564	2.0169	3.2700e-003	0.1942	0.1205	0.3147	0.0787	0.1128	0.1915	0.0000	290.8571	290.8571	0.0678	0.0000	292.5532
2020	1.6709	0.8498	0.7997	1.2800e-003	0.0129	0.0385	0.0513	3.5200e-003	0.0362	0.0397	0.0000	112.5232	112.5232	0.0234	0.0000	113.1074
Maximum	**1.6709**	**2.5564**	**2.0169**	**3.2700e-003**	**0.1942**	**0.1205**	**0.3147**	**0.0787**	**0.1128**	**0.1915**	**0.0000**	**290.8571**	**290.8571**	**0.0678**	**0.0000**	**292.5532**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.1582	2.6671	2.0844	3.2700e-003	0.1014	0.0135	0.1149	0.0231	0.0134	0.0365	0.0000	290.8568	290.8568	0.0678	0.0000	292.5529
2020	1.6356	1.0267	0.8236	1.2800e-003	0.0129	5.4200e-003	0.0183	3.5200e-003	5.3800e-003	8.9000e-003	0.0000	112.5231	112.5231	0.0234	0.0000	113.1073
Maximum	**1.6356**	**2.6671**	**2.0844**	**3.2700e-003**	**0.1014**	**0.0135**	**0.1149**	**0.0231**	**0.0134**	**0.0365**	**0.0000**	**290.8568**	**290.8568**	**0.0678**	**0.0000**	**292.5529**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**8.46**	**-8.44**	**-3.24**	**0.00**	**44.82**	**88.07**	**63.60**	**67.64**	**87.37**	**80.35**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2019	3-31-2019	1.0054	0.8864
2	4-1-2019	6-30-2019	0.6104	0.6432
3	7-1-2019	9-30-2019	0.6171	0.6502
4	10-1-2019	12-31-2019	0.6138	0.6469
5	1-1-2020	3-31-2020	0.5596	0.6306
6	4-1-2020	6-30-2020	1.2261	1.2945

7	**7-1-2020**	**9-30-2020**	0.7381	0.7406
		Highest	1.2261	1.2945

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.0993	0.0333	2.0634	7.4000e-004		0.0404	0.0404		0.0404	0.0404	3.9304	13.1324	17.0628	0.0216	1.8000e-004	17.6566
Energy	0.0161	0.1397	0.0758	8.8000e-004		0.0111	0.0111		0.0111	0.0111	0.0000	321.6681	321.6681	0.0193	6.2800e-003	324.0224
Mobile	1.3042	5.7877	11.9291	0.0301	2.2660	0.0327	2.2987	0.6099	0.0307	0.6405	0.0000	2,768.9836	2,768.9836	0.1453	0.0000	2,772.6157
Waste						0.0000	0.0000		0.0000	0.0000	32.6491	0.0000	32.6491	1.9295	0.0000	80.8867
Water						0.0000	0.0000		0.0000	0.0000	6.2278	17.3294	23.5572	0.0232	0.0139	28.2792
Total	**2.4196**	**5.9607**	**14.0683**	**0.0318**	**2.2660**	**0.0842**	**2.3502**	**0.6099**	**0.0822**	**0.6920**	**42.8073**	**3,121.1135**	**3,163.9208**	**2.1388**	**0.0204**	**3,223.4605**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.0993	0.0333	2.0634	7.4000e-004		0.0404	0.0404		0.0404	0.0404	3.9304	13.1324	17.0628	0.0216	1.8000e-004	17.6566
Energy	0.0161	0.1397	0.0758	8.8000e-004		0.0111	0.0111		0.0111	0.0111	0.0000	321.6681	321.6681	0.0193	6.2800e-003	324.0224
Mobile	1.3042	5.7877	11.9291	0.0301	2.2660	0.0327	2.2987	0.6099	0.0307	0.6405	0.0000	2,768.9836	2,768.9836	0.1453	0.0000	2,772.6157

Waste						0.0000	0.0000		0.0000	0.0000	32.6491	0.0000	32.6491	1.9295	0.0000	80.8867
Water						0.0000	0.0000		0.0000	0.0000	6.2278	17.3294	23.5572	0.0232	0.0139	28.2792
Total	**2.4196**	**5.9607**	**14.0683**	**0.0318**	**2.2660**	**0.0842**	**2.3502**	**0.6099**	**0.0822**	**0.6920**	**42.8073**	**3,121.1135**	**3,163.9208**	**2.1388**	**0.0204**	**3,223.4605**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2019	1/28/2019	5	20	
2	Site Preparation	Site Preparation	1/29/2019	2/11/2019	5	10	
3	Grading	Grading	2/12/2019	3/25/2019	5	30	
4	Building Construction	Building Construction	3/26/2019	5/18/2020	5	300	
5	Paving	Paving	5/19/2020	6/15/2020	5	20	
6	Architectural Coating	Architectural Coating	6/16/2020	7/13/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 0

Residential Indoor: 433,688; Residential Outdoor: 144,563; Non-Residential Indoor: 5,850; Non-Residential Outdoor: 1,950; Striped

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	1	8.00	158	0.38
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40

Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	1	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	2.00	231	0.29
Building Construction	Forklifts	2	8.00	89	0.20
Building Construction	Generator Sets	1	4.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	4.00	130	0.42
Paving	Paving Equipment	2	4.00	132	0.36
Paving	Rollers	2	4.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	3	8.00	0.00	79.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	5.00	0.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Grading	7	18.00	0.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	266.00	60.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	53.00	0.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Use Soil Stabilizer

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					8.5400e-003	0.0000	8.5400e-003	1.2900e-003	0.0000	1.2900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0186	0.1835	0.1125	2.0000e-004		9.4800e-003	9.4800e-003		8.9000e-003	8.9000e-003	0.0000	17.6830	17.6830	4.2700e-003	0.0000	17.7898
Total	**0.0186**	**0.1835**	**0.1125**	**2.0000e-004**	**8.5400e-003**	**9.4800e-003**	**0.0180**	**1.2900e-003**	**8.9000e-003**	**0.0102**	**0.0000**	**17.6830**	**17.6830**	**4.2700e-003**	**0.0000**	**17.7898**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-004	4.1900e-003	7.4000e-004	0.0000	3.0000e-005	1.0000e-005	4.0000e-005	1.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.4445	0.4445	8.0000e-005	0.0000	0.4465
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	7.0000e-005	8.7000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0708	0.0708	1.0000e-005	0.0000	0.0710
Total	**2.4000e-004**	**4.2600e-003**	**1.6100e-003**	**0.0000**	**9.0000e-005**	**1.0000e-005**	**1.0000e-004**	**3.0000e-005**	**1.0000e-005**	**4.0000e-005**	**0.0000**	**0.5154**	**0.5154**	**9.0000e-005**	**0.0000**	**0.5174**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.8400e-003	0.0000	3.8400e-003	2.9000e-004	0.0000	2.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.5000e-003	0.1660	0.1231	2.0000e-004		7.3000e-004	7.3000e-004		7.3000e-004	7.3000e-004	0.0000	17.6830	17.6830	4.2700e-003	0.0000	17.7898
Total	**6.5000e-003**	**0.1660**	**0.1231**	**2.0000e-004**	**3.8400e-003**	**7.3000e-004**	**4.5700e-003**	**2.9000e-004**	**7.3000e-004**	**1.0200e-003**	**0.0000**	**17.6830**	**17.6830**	**4.2700e-003**	**0.0000**	**17.7898**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-004	4.1900e-003	7.4000e-004	0.0000	3.0000e-005	1.0000e-005	4.0000e-005	1.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.4445	0.4445	8.0000e-005	0.0000	0.4465
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	7.0000e-005	8.7000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0708	0.0708	1.0000e-005	0.0000	0.0710
Total	**2.4000e-004**	**4.2600e-003**	**1.6100e-003**	**0.0000**	**9.0000e-005**	**1.0000e-005**	**1.0000e-004**	**3.0000e-005**	**1.0000e-005**	**4.0000e-005**	**0.0000**	**0.5154**	**0.5154**	**9.0000e-005**	**0.0000**	**0.5174**

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Fugitive Dust					0.0301	0.0000	0.0301	0.0166	0.0000	0.0166	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.8400e-003	0.0721	0.0329	6.0000e-005		3.7200e-003	3.7200e-003		3.4300e-003	3.4300e-003	0.0000	5.2298	5.2298	1.6500e-003	0.0000	5.2712
Total	**6.8400e-003**	**0.0721**	**0.0329**	**6.0000e-005**	**0.0301**	**3.7200e-003**	**0.0338**	**0.0166**	**3.4300e-003**	**0.0200**	**0.0000**	**5.2298**	**5.2298**	**1.6500e-003**	**0.0000**	**5.2712**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0000e-005	2.0000e-005	2.7000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0221	0.0221	0.0000	0.0000	0.0222
Total	**4.0000e-005**	**2.0000e-005**	**2.7000e-004**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0221**	**0.0221**	**0.0000**	**0.0000**	**0.0222**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0136	0.0000	0.0136	3.7200e-003	0.0000	3.7200e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.7700e-003	0.0512	0.0344	6.0000e-005		2.1000e-004	2.1000e-004		2.1000e-004	2.1000e-004	0.0000	5.2298	5.2298	1.6500e-003	0.0000	5.2712

Total	**1.7700e-003**	**0.0512**	**0.0344**	**6.0000e-005**	**0.0136**	**2.1000e-004**	**0.0138**	**3.7200e-003**	**2.1000e-004**	**3.9300e-003**	**0.0000**	**5.2298**	**5.2298**	**1.6500e-003**	**0.0000**	**5.2712**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0000e-005	2.0000e-005	2.7000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0221	0.0221	0.0000	0.0000	0.0222
Total	**4.0000e-005**	**2.0000e-005**	**2.7000e-004**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0221**	**0.0221**	**0.0000**	**0.0000**	**0.0222**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0551	0.6241	0.3797	7.0000e-004		0.0282	0.0282		0.0259	0.0259	0.0000	63.1429	63.1429	0.0200	0.0000	63.6423
Total	**0.0551**	**0.6241**	**0.3797**	**7.0000e-004**	**0.1301**	**0.0282**	**0.1583**	**0.0540**	**0.0259**	**0.0799**	**0.0000**	**63.1429**	**63.1429**	**0.0200**	**0.0000**	**63.6423**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.8000e-004	2.3000e-004	2.9300e-003	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	6.0000e-005	0.0000	0.2390	0.2390	2.0000e-005	0.0000	0.2395
Total	**4.8000e-004**	**2.3000e-004**	**2.9300e-003**	**0.0000**	**2.0000e-004**	**0.0000**	**2.0000e-004**	**5.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.2390**	**0.2390**	**2.0000e-005**	**0.0000**	**0.2395**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0586	0.0000	0.0586	0.0121	0.0000	0.0121	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0216	0.5920	0.4297	7.0000e-004		2.3800e-003	2.3800e-003		2.3800e-003	2.3800e-003	0.0000	63.1428	63.1428	0.0200	0.0000	63.6422
Total	**0.0216**	**0.5920**	**0.4297**	**7.0000e-004**	**0.0586**	**2.3800e-003**	**0.0609**	**0.0121**	**2.3800e-003**	**0.0145**	**0.0000**	**63.1428**	**63.1428**	**0.0200**	**0.0000**	**63.6422**

Mitigated Construction Off-Site

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

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.8000e-004	2.3000e-004	2.9300e-003	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	6.0000e-005	0.0000	0.2390	0.2390	2.0000e-005	0.0000	0.2395
Total	**4.8000e-004**	**2.3000e-004**	**2.9300e-003**	**0.0000**	**2.0000e-004**	**0.0000**	**2.0000e-004**	**5.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.2390**	**0.2390**	**2.0000e-005**	**0.0000**	**0.2395**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1468	1.2022	1.0713	1.5900e-003		0.0775	0.0775		0.0730	0.0730	0.0000	136.9985	136.9985	0.0333	0.0000	137.8319
Total	**0.1468**	**1.2022**	**1.0713**	**1.5900e-003**		**0.0775**	**0.0775**		**0.0730**	**0.0730**	**0.0000**	**136.9985**	**136.9985**	**0.0333**	**0.0000**	**137.8319**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0134	0.4475	0.1253	4.5000e-004	5.4900e-003	1.3000e-003	6.7900e-003	1.6000e-003	1.2500e-003	2.8500e-003	0.0000	43.3585	43.3585	6.8100e-003	0.0000	43.5287
Worker	0.0472	0.0226	0.2904	2.7000e-004	0.0197	3.4000e-004	0.0200	5.2700e-003	3.2000e-004	5.5800e-003	0.0000	23.6679	23.6679	1.6900e-003	0.0000	23.7102
Total	**0.0606**	**0.4701**	**0.4156**	**7.2000e-004**	**0.0252**	**1.6400e-003**	**0.0268**	**6.8700e-003**	**1.5700e-003**	**8.4300e-003**	**0.0000**	**67.0264**	**67.0264**	**8.5000e-003**	**0.0000**	**67.2389**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0670	1.3833	1.0768	1.5900e-003		8.5400e-003	8.5400e-003		8.5400e-003	8.5400e-003	0.0000	136.9983	136.9983	0.0333	0.0000	137.8317
Total	**0.0670**	**1.3833**	**1.0768**	**1.5900e-003**		**8.5400e-003**	**8.5400e-003**		**8.5400e-003**	**8.5400e-003**	**0.0000**	**136.9983**	**136.9983**	**0.0333**	**0.0000**	**137.8317**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0134	0.4475	0.1253	4.5000e-004	5.4900e-003	1.3000e-003	6.7900e-003	1.6000e-003	1.2500e-003	2.8500e-003	0.0000	43.3585	43.3585	6.8100e-003	0.0000	43.5287
Worker	0.0472	0.0226	0.2904	2.7000e-004	0.0197	3.4000e-004	0.0200	5.2700e-003	3.2000e-004	5.5800e-003	0.0000	23.6679	23.6679	1.6900e-003	0.0000	23.7102
Total	**0.0606**	**0.4701**	**0.4156**	**7.2000e-004**	**0.0252**	**1.6400e-003**	**0.0268**	**6.8700e-003**	**1.5700e-003**	**8.4300e-003**	**0.0000**	**67.0264**	**67.0264**	**8.5000e-003**	**0.0000**	**67.2389**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0648	0.5414	0.5197	7.8000e-004		0.0330	0.0330		0.0311	0.0311	0.0000	66.5097	66.5097	0.0161	0.0000	66.9132
Total	**0.0648**	**0.5414**	**0.5197**	**7.8000e-004**		**0.0330**	**0.0330**		**0.0311**	**0.0311**	**0.0000**	**66.5097**	**66.5097**	**0.0161**	**0.0000**	**66.9132**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.4100e-003	0.2109	0.0539	2.2000e-004	2.7000e-003	3.9000e-004	3.1000e-003	7.9000e-004	3.8000e-004	1.1600e-003	0.0000	21.5535	21.5535	3.0300e-003	0.0000	21.6292
Worker	0.0213	9.8200e-003	0.1279	1.3000e-004	9.6900e-003	1.6000e-004	9.8500e-003	2.5900e-003	1.5000e-004	2.7400e-003	0.0000	11.3086	11.3086	7.3000e-004	0.0000	11.3268
Total	**0.0267**	**0.2207**	**0.1818**	**3.5000e-004**	**0.0124**	**5.5000e-004**	**0.0130**	**3.3800e-003**	**5.3000e-004**	**3.9000e-003**	**0.0000**	**32.8621**	**32.8621**	**3.7600e-003**	**0.0000**	**32.9560**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0330	0.6813	0.5304	7.8000e-004		4.2100e-003	4.2100e-003		4.2100e-003	4.2100e-003	0.0000	66.5096	66.5096	0.0161	0.0000	66.9131

Total	**0.0330**	**0.6813**	**0.5304**	**7.8000e-004**		**4.2100e-003**	**4.2100e-003**		**4.2100e-003**	**4.2100e-003**	**0.0000**	**66.5096**	**66.5096**	**0.0161**	**0.0000**	**66.9131**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.4100e-003	0.2109	0.0539	2.2000e-004	2.7000e-003	3.9000e-004	3.1000e-003	7.9000e-004	3.8000e-004	1.1600e-003	0.0000	21.5535	21.5535	3.0300e-003	0.0000	21.6292
Worker	0.0213	9.8200e-003	0.1279	1.3000e-004	9.6900e-003	1.6000e-004	9.8500e-003	2.5900e-003	1.5000e-004	2.7400e-003	0.0000	11.3086	11.3086	7.3000e-004	0.0000	11.3268
Total	**0.0267**	**0.2207**	**0.1818**	**3.5000e-004**	**0.0124**	**5.5000e-004**	**0.0130**	**3.3800e-003**	**5.3000e-004**	**3.9000e-003**	**0.0000**	**32.8621**	**32.8621**	**3.7600e-003**	**0.0000**	**32.9560**

3.6 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.7800e-003	0.0703	0.0733	1.1000e-004		3.7600e-003	3.7600e-003		3.4600e-003	3.4600e-003	0.0000	10.0141	10.0141	3.2400e-003	0.0000	10.0951
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.7800e-003**	**0.0703**	**0.0733**	**1.1000e-004**		**3.7600e-003**	**3.7600e-003**		**3.4600e-003**	**3.4600e-003**	**0.0000**	**10.0141**	**10.0141**	**3.2400e-003**	**0.0000**	**10.0951**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.4000e-004	1.1000e-004	1.4600e-003	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1288	0.1288	1.0000e-005	0.0000	0.1290
Total	**2.4000e-004**	**1.1000e-004**	**1.4600e-003**	**0.0000**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1288**	**0.1288**	**1.0000e-005**	**0.0000**	**0.1290**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.6600e-003	0.1006	0.0865	1.1000e-004		5.0000e-004	5.0000e-004		5.0000e-004	5.0000e-004	0.0000	10.0141	10.0141	3.2400e-003	0.0000	10.0951
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.6600e-003**	**0.1006**	**0.0865**	**1.1000e-004**		**5.0000e-004**	**5.0000e-004**		**5.0000e-004**	**5.0000e-004**	**0.0000**	**10.0141**	**10.0141**	**3.2400e-003**	**0.0000**	**10.0951**

Mitigated Construction Off-Site

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

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.4000e-004	1.1000e-004	1.4600e-003	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1288	0.1288	1.0000e-005	0.0000	0.1290
Total	**2.4000e-004**	**1.1000e-004**	**1.4600e-003**	**0.0000**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1288**	**0.1288**	**1.0000e-005**	**0.0000**	**0.1290**

3.7 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.5691					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4200e-003	0.0168	0.0183	3.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	**1.5715**	**0.0168**	**0.0183**	**3.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.1100e-003**	**1.1100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.0000e-004**	**0.0000**	**2.5582**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.6000e-004	4.0000e-004	5.1500e-003	1.0000e-005	3.9000e-004	1.0000e-005	4.0000e-004	1.0000e-004	1.0000e-005	1.1000e-004	0.0000	0.4552	0.4552	3.0000e-005	0.0000	0.4559
Total	**8.6000e-004**	**4.0000e-004**	**5.1500e-003**	**1.0000e-005**	**3.9000e-004**	**1.0000e-005**	**4.0000e-004**	**1.0000e-004**	**1.0000e-005**	**1.1000e-004**	**0.0000**	**0.4552**	**0.4552**	**3.0000e-005**	**0.0000**	**0.4559**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.5691					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.1400e-003	0.0235	0.0183	3.0000e-005		1.4000e-004	1.4000e-004		1.4000e-004	1.4000e-004	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	**1.5702**	**0.0235**	**0.0183**	**3.0000e-005**		**1.4000e-004**	**1.4000e-004**		**1.4000e-004**	**1.4000e-004**	**0.0000**	**2.5533**	**2.5533**	**2.0000e-004**	**0.0000**	**2.5582**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.6000e-004	4.0000e-004	5.1500e-003	1.0000e-005	3.9000e-004	1.0000e-005	4.0000e-004	1.0000e-004	1.0000e-005	1.1000e-004	0.0000	0.4552	0.4552	3.0000e-005	0.0000	0.4559
Total	**8.6000e-004**	**4.0000e-004**	**5.1500e-003**	**1.0000e-005**	**3.9000e-004**	**1.0000e-005**	**4.0000e-004**	**1.0000e-004**	**1.0000e-005**	**1.1000e-004**	**0.0000**	**0.4552**	**0.4552**	**3.0000e-005**	**0.0000**	**0.4559**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.3042	5.7877	11.9291	0.0301	2.2660	0.0327	2.2987	0.6099	0.0307	0.6405	0.0000	2,768.9836	2,768.9836	0.1453	0.0000	2,772.6157
Unmitigated	1.3042	5.7877	11.9291	0.0301	2.2660	0.0327	2.2987	0.6099	0.0307	0.6405	0.0000	2,768.9836	2,768.9836	0.1453	0.0000	2,772.6157

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,370.88	1,317.96	1207.08	3,094,689	3,094,689
Fast Food Restaurant with Drive Thru	2,989.07	4,350.15	3269.84	3,011,910	3,011,910
Parking Lot	0.00	0.00	0.00		
Total	4,359.95	5,668.11	4,476.92	6,106,599	6,106,599

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Fast Food Restaurant with Drive Thru	9.50	7.30	7.30	2.20	78.80	19.00	29	21	50
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.578299	0.039453	0.169996	0.109068	0.028307	0.006716	0.029274	0.026666	0.003071	0.001838	0.005325	0.000874	0.001112
Fast Food Restaurant with Drive Thru	0.578299	0.039453	0.169996	0.109068	0.028307	0.006716	0.029274	0.026666	0.003071	0.001838	0.005325	0.000874	0.001112
Parking Lot	0.578299	0.039453	0.169996	0.109068	0.028307	0.006716	0.029274	0.026666	0.003071	0.001838	0.005325	0.000874	0.001112

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	162.5899	162.5899	0.0163	3.3600e-003	163.9988
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	162.5899	162.5899	0.0163	3.3600e-003	163.9988
NaturalGas Mitigated	0.0161	0.1397	0.0758	8.8000e-004		0.0111	0.0111		0.0111	0.0111	0.0000	159.0782	159.0782	3.0500e-003	2.9200e-003	160.0236
NaturalGas Unmitigated	0.0161	0.1397	0.0758	8.8000e-004		0.0111	0.0111		0.0111	0.0111	0.0000	159.0782	159.0782	3.0500e-003	2.9200e-003	160.0236

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	2.17714e+006	0.0117	0.1003	0.0427	6.4000e-004		8.1100e-003	8.1100e-003		8.1100e-003	8.1100e-003	0.0000	116.1806	116.1806	2.2300e-003	2.1300e-003	116.8710
Fast Food Restaurant with Drive Thru	803872	4.3300e-003	0.0394	0.0331	2.4000e-004		2.9900e-003	2.9900e-003		2.9900e-003	2.9900e-003	0.0000	42.8977	42.8977	8.2000e-004	7.9000e-004	43.1526
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0161**	**0.1397**	**0.0758**	**8.8000e-004**		**0.0111**	**0.0111**		**0.0111**	**0.0111**	**0.0000**	**159.0782**	**159.0782**	**3.0500e-003**	**2.9200e-003**	**160.0236**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	2.17714e+006	0.0117	0.1003	0.0427	6.4000e-004		8.1100e-003	8.1100e-003		8.1100e-003	8.1100e-003	0.0000	116.1806	116.1806	2.2300e-003	2.1300e-003	116.8710
Fast Food Restaurant with Drive Thru	803872	4.3300e-003	0.0394	0.0331	2.4000e-004		2.9900e-003	2.9900e-003		2.9900e-003	2.9900e-003	0.0000	42.8977	42.8977	8.2000e-004	7.9000e-004	43.1526
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0161**	**0.1397**	**0.0758**	**8.8000e-004**		**0.0111**	**0.0111**		**0.0111**	**0.0111**	**0.0000**	**159.0782**	**159.0782**	**3.0500e-003**	**2.9200e-003**	**160.0236**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.04034e+006	136.8487	0.0137	2.8300e-003	138.0346
Fast Food Restaurant with Drive Thru	126528	16.6438	1.6600e-003	3.4000e-004	16.7880
Parking Lot	69160	9.0974	9.1000e-004	1.9000e-004	9.1763
Total		**162.5899**	**0.0163**	**3.3600e-003**	**163.9988**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.04034e+006	136.8487	0.0137	2.8300e-003	138.0346
Fast Food Restaurant with Drive Thru	126528	16.6438	1.6600e-003	3.4000e-004	16.7880
Parking Lot	69160	9.0974	9.1000e-004	1.9000e-004	9.1763
Total		**162.5899**	**0.0163**	**3.3600e-003**	**163.9988**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.0993	0.0333	2.0634	7.4000e-004		0.0404	0.0404		0.0404	0.0404	3.9304	13.1324	17.0628	0.0216	1.8000e-004	17.6566
Unmitigated	1.0993	0.0333	2.0634	7.4000e-004		0.0404	0.0404		0.0404	0.0404	3.9304	13.1324	17.0628	0.0216	1.8000e-004	17.6566

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1569					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8643					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0208	0.0116	0.1836	6.4000e-004		0.0301	0.0301		0.0301	0.0301	3.9304	10.0670	13.9974	0.0186	1.8000e-004	14.5166
Landscaping	0.0572	0.0217	1.8798	1.0000e-004		0.0104	0.0104		0.0104	0.0104	0.0000	3.0654	3.0654	2.9900e-003	0.0000	3.1400
Total	**1.0993**	**0.0333**	**2.0634**	**7.4000e-004**		**0.0404**	**0.0404**		**0.0404**	**0.0404**	**3.9304**	**13.1324**	**17.0628**	**0.0216**	**1.8000e-004**	**17.6566**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1569					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.8643					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0208	0.0116	0.1836	6.4000e-004		0.0301	0.0301		0.0301	0.0301	3.9304	10.0670	13.9974	0.0186	1.8000e-004	14.5166
Landscaping	0.0572	0.0217	1.8798	1.0000e-004		0.0104	0.0104		0.0104	0.0104	0.0000	3.0654	3.0654	2.9900e-003	0.0000	3.1400
Total	**1.0993**	**0.0333**	**2.0634**	**7.4000e-004**		**0.0404**	**0.0404**		**0.0404**	**0.0404**	**3.9304**	**13.1324**	**17.0628**	**0.0216**	**1.8000e-004**	**17.6566**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	23.5572	0.0232	0.0139	28.2792
Unmitigated	23.5572	0.0232	0.0139	28.2792

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	16.4188 / 10.351	22.2610	0.0216	0.0130	26.6680
Fast Food Restaurant with Drive Thru	1.18378 / 0.0755605	1.2962	1.5300e-003	9.3000e-004	1.6113
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**23.5572**	**0.0232**	**0.0139**	**28.2792**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	16.4188 / 10.351	22.2610	0.0216	0.0130	26.6680
Fast Food Restaurant with Drive Thru	1.18378 / 0.0755605	1.2962	1.5300e-003	9.3000e-004	1.6113

Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**23.5572**	**0.0232**	**0.0139**	**28.2792**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	32.6491	1.9295	0.0000	80.8867
Unmitigated	32.6491	1.9295	0.0000	80.8867

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	115.92	23.5307	1.3906	0.0000	58.2963
Fast Food Restaurant with Drive Thru	44.92	9.1184	0.5389	0.0000	22.5903
Parking Lot	0	0.0000	0.0000	0.0000	0.0000

Total		**32.6491**	**1.9295**	**0.0000**	**80.8867**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	115.92	23.5307	1.3906	0.0000	58.2963
Fast Food Restaurant with Drive Thru	44.92	9.1184	0.5389	0.0000	22.5903
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**32.6491**	**1.9295**	**0.0000**	**80.8867**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment 3: Screening Community Risk Calculations

Plant #7658 – Chapel of the Chimes – Emissions, modeling information and health impact calculations

BAY AREA AIR QUALITY MANAGEMENT DISTRICT Printed: NOV 20, 2018
DETAIL POLLUTANTS - ABATED
MOST RECENT P/O APPROVED (2018)

Chapel of the Chimes (P# 7658)

S#	SOURCE NAME / MATERIAL THROUGHPUT	SOURCE CODE / DATE	POLLUTANT	CODE	LBS/DAY
1	Cremation Retort with Integral Afterburner	C5250189			
			Benzene	41	1.76E-06
			Formaldehyde	124	2.07E-05
			Toluene	293	9.37E-07
			Organics (other, including	990	1.58E-03
			Particulates (part not spe	1990	8.27E-04
			Nitrous Oxide (N2O)	2030	6.36E-05
			Nitrogen Oxides (part not	2990	3.86E-02
			Sulfur Dioxide (SO2)	3990	1.57E-04
			Carbon Monoxide (CO) pollu	4990	9.64E-03
			Carbon Dioxide, non-biogen	6960	3.37E+01
			Methane (CH4)	6970	5.24E-04
		G8011791			
			Formaldehyde	124	2.05E-06
			Acetaldehyde	335	7.84E-06
			Chlorinated dioxins & fura	951	8.44E-11
			Organics (other, including	990	4.52E-04
			Arsenic (all)	1030	1.81E-06
			Beryllium (all) pollutant	1040	8.44E-08
			Cadmium	1070	6.63E-07
			Chromium (hexavalent)	1095	8.44E-07
			Copper (all) pollutant	1110	1.63E-06
			Lead (all) pollutant	1140	3.98E-06
			Nickel pollutant	1180	2.29E-06
			Mercury (all) pollutant	1190	2.05E-04
			Selenium	1220	2.65E-06
			Zinc pollutant	1320	2.11E-05
			PAH's (non-speciated)	1840	2.23E-07
			PAH's (benzo[a]pyrene equi	1860	2.95E-09
			Particulates (part not spe	1990	1.87E-05
			Nitrous Oxide (N2O)	2030	2.03E-04
			Nitrogen Oxides (part not	2990	1.36E-02
			Carbon Monoxide (CO) pollu	4990	1.13E-02
			Carbon Dioxide, biogenic C	6961	2.26E+00
			Methane (CH4)	6970	6.78E-04
			Hydrogen Chloride (HCl)	8010	4.34E-03
			Hydrogen Fluoride (HF)	8020	3.98E-05
2	Cremation Retort with Integral Afterburner	C5250189			
			Benzene	41	2.12E-07
			Formaldehyde	124	2.49E-06
			Toluene	293	1.13E-07
			Organics (other, including	990	1.90E-04
			Particulates (part not spe	1990	9.96E-05
			Nitrous Oxide (N2O)	2030	7.67E-06
			Nitrogen Oxides (part not	2990	4.65E-03
			Sulfur Dioxide (SO2)	3990	1.89E-05
			Carbon Monoxide (CO) pollu	4990	1.16E-03
			Carbon Dioxide, non-biogen	6960	4.06E+00
			Methane (CH4)	6970	6.31E-05
		G8011791			
			Formaldehyde	124	2.79E-07
			Acetaldehyde	335	1.07E-06
			Chlorinated dioxins & fura	951	1.15E-11
			Organics (other, including	990	6.16E-05
			Arsenic (all)	1030	2.47E-07
			Beryllium (all) pollutant	1040	1.15E-08
			Cadmium	1070	9.04E-08
			Chromium (hexavalent)	1095	1.15E-07
			Copper (all) pollutant	1110	2.22E-07
			Lead (all) pollutant	1140	5.42E-07
			Nickel pollutant	1180	3.12E-07
			Mercury (all) pollutant	1190	2.79E-05
			Selenium	1220	3.62E-07

Zinc pollutant	1320	2.88E-06
PAH's (non-speciated)	1840	3.04E-08
PAH's (benzo[a]pyrene equi	1860	4.03E-10
Particulates (part not spe	1990	2.55E-06
Nitrous Oxide (N2O)	2030	2.77E-05
Nitrogen Oxides (part not	2990	1.85E-03
Carbon Monoxide (CO) pollu	4990	1.55E-03
Carbon Dioxide, biogenic C	6961	3.08E-01
Methane (CH4)	6970	9.25E-05
Hydrogen Chloride (HCl)	8010	5.92E-04
Hydrogen Fluoride (HF)	8020	5.42E-06

PLANT TOTAL:

lbs/day	Pollutant
8.90E-06	Acetaldehyde (335)
2.05E-06	Arsenic (all) (1030)
1.97E-06	Benzene (41)
9.59E-08	Beryllium (all) pollutant (1040)
7.53E-07	Cadmium (1070)
2.57E+00	Carbon Dioxide, biogenic CO2 (6961)
3.78E+01	Carbon Dioxide, non-biogenic CO2 (6960)
2.37E-02	Carbon Monoxide (CO) pollutant (4990)
9.59E-11	Chlorinated dioxins & furans (Calif TCDD equiv) (951)
9.59E-07	Chromium (hexavalent) (1095)
1.85E-06	Copper (all) pollutant (1110)
2.55E-05	Formaldehyde (124)
4.93E-03	Hydrogen Chloride (HCl) (8010)
4.52E-05	Hydrogen Fluoride (HF) (8020)
4.52E-06	Lead (all) pollutant (1140)
2.33E-04	Mercury (all) pollutant (1190)
1.36E-03	Methane (CH4) (6970)
2.60E-06	Nickel pollutant (1180)
5.86E-02	Nitrogen Oxides (part not spec elsewhere) (2990)
3.02E-04	Nitrous Oxide (N2O) (2030)
2.28E-03	Organics (other, including CH4) (990)
3.36E-09	PAH's (benzo[a]pyrene equiv) (1860)
2.53E-07	PAH's (non-speciated) (1840)
9.47E-04	Particulates (part not spec elsewhere) (1990)
3.01E-06	Selenium (1220)
1.75E-04	Sulfur Dioxide (SO2) (3990)
1.05E-06	Toluene (293)
2.40E-05	Zinc pollutant (1320)

Chapel of the Chimes, Santa Rosa, CA
TAC Health Impacts at 325 Yolanda Ave. Project Site
Maximum DPM Cancer Risk at On-Site Residential Receptors

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 - <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 for infants and 80th percentile for children and adults

Chapel of the Chimes, Santa Rosa, CA - Health Impact Modeling
Source Parameters for Point Sources Used in Modeling Creamatory Stacks

Source	Stack Height (ft)	Stack Diam (in)	Exhaust Temp (F)	Volume Flow (acfm)	Velocity (ft/min)	Velocity (ft/sec)
Crematory Exhaust Stacks (2)	23.0	20	1100	-	984	16.4

Source	Stack Height (m)	Stack Diam (m)	Exhaust Temp (K)			Velocity (m/sec)
Crematory Exhaust Stacks (2)	7.01	0.508	866.5			5.0

BAAQMD Plant # 7658 (Chapel of the Chimes) TAC Emissions, Maximum-Modeled Concentrations, and Health Impacts at Project Site
On-Site Project Receptors - 3rd Floor Receptors - 7.9 meter height

	TAC Emissions[a]			Maximum Unit Concentration (X/Q)[b]			Maximum TAC Concentrations[c]			Reference Exposure Levels[d]			Cancer	Hazard Index			
TAC	(lb/day)	(lb/hr)	(g/s)	1-hour ($\mu g/m^3$)/(g/s)	8-hour ($\mu g/m^3$)/(g/s)	Annual ($\mu g/m^3$)/(g/s)	1-hour ($\mu g/m^3$)	8-hour ($\mu g/m^3$)	Annual ($\mu g/m^3$)	Acute ($\mu g/m^3$)	Chronic 8-hour ($\mu g/m^3$)	Chronic Annual ($\mu g/m^3$)	Potency Factor $(mg/kg\text{-}day)^{-1}$	Acute (-)	Chronic 8-hour (-)	Chronic Annual (-)	Cancer Risk (per million)
Acetaldehyde	8.90E-06	3.71E-07	4.67E-08	3.92E+02	1.39E+02	5.77E+00	1.83E-05	6.49E-06	2.70E-07	4.7E+02	3.0E+02	1.4E+02	1.0E-02	3.89E-08	2.16E-08	1.93E-09	1.83E-06
Arsenic (all)	2.05E-06	8.54E-08	1.08E-08	3.92E+02	1.39E+02	5.77E+00	4.22E-06	1.49E-06	6.21E-08	2.00E-01	1.50E-02	1.52E-02	1.20E+01	2.11E-05	9.96E-05	4.09E-06	5.04E-04
Benzene (41)	1.97E-06	8.21E-08	1.03E-08	3.92E+02	1.39E+02	5.77E+00	4.05E-06	1.44E-06	5.97E-08	2.70E-01	3.00E+00	3.00E+00	1.00E-01	1.50E-05	4.79E-07	1.99E-08	4.04E-06
Beryllium (all) pollutant	9.59E-08	4.00E-09	5.03E-10	3.92E+02	1.39E+02	5.77E+00	1.97E-07	6.99E-08	2.91E-09	2.40E+02		7.00E-03	8.40E+00	8.22E-10	0.00E+00	4.15E-07	1.65E-05
Cadmium	7.53E-07	3.14E-08	3.95E-09	3.92E+02	1.39E+02	5.77E+00	1.55E-06	5.49E-07	2.28E-08			2.00E-02	1.50E+01	0.00E+00	0.00E+00	1.14E-06	2.32E-04
Chlorinated dioxins & furans (Calif TCDD equiv)	9.59E-11	4.00E-12	5.03E-13	3.92E+02	1.39E+02	5.77E+00	1.97E-10	6.99E-11	2.91E-12			4.00E-05	1.30E+05	0.00E+00	0.00E+00	7.27E-08	2.56E-04
Chromium (hexavalent)	9.59E-07	4.00E-08	5.03E-09	3.92E+02	1.39E+02	5.77E+00	1.97E-06	6.99E-07	2.91E-08			2.00E-01	5.10E+02	0.00E+00	0.00E+00	1.45E-07	1.00E-02
Copper (all) pollutant	1.85E-06	7.71E-08	9.71E-09	3.92E+02	1.39E+02	5.77E+00	3.80E-06	1.35E-06	5.61E-08	1.00E+02				3.80E-08	0.00E+00	0.00E+00	0.00E+00
Formaldehyde	2.55E-05	1.06E-06	1.34E-07	3.92E+02	1.39E+02	5.77E+00	5.24E-05	1.86E-05	7.73E-07	5.50E+01	9.00E+00	9.00E+00	2.10E-02	9.53E-07	2.07E-06	8.59E-08	1.10E-05
Hydrogen Chloride (HCl)	4.93E-03	2.05E-04	2.59E-05	3.92E+02	1.39E+02	5.77E+00	1.01E-02	3.59E-03	1.49E-04	2.10E+03		9.00E+00		4.83E-06	0.00E+00	1.66E-05	0.00E+00
Hydrogen Fluoride (HF)	4.52E-05	1.88E-06	2.37E-07	3.92E+02	1.39E+02	5.77E+00	9.30E-05	3.29E-05	1.37E-06	2.40E+02		1.40E+01		3.87E-07	0.00E+00	9.79E-08	0.00E+00
Lead (all) pollutant	4.52E-06	1.88E-07	2.37E-08	3.92E+02	1.39E+02	5.77E+00	9.30E-06	3.29E-06	1.37E-07				4.20E-02	0.00E+00	0.00E+00	0.00E+00	3.89E-06
Mercury (all) pollutant	2.33E-04	9.71E-06	1.22E-06	3.92E+02	1.39E+02	5.77E+00	4.79E-04	1.70E-04	7.06E-06	6.00E-01	6.00E-02	3.00E-02	1.60E-04	7.99E-04	2.83E-03	2.35E-04	7.65E-07
Nickel pollutant	2.60E-06	1.08E-07	1.37E-08	3.92E+02	1.39E+02	5.77E+00	5.35E-06	1.90E-06	7.88E-08	2.00E-01	6.00E-02	1.40E-02	9.10E-01	2.67E-05	3.16E-05	5.63E-06	4.85E-05
PAH's (benzo[a]pyrene equiv)	3.36E-09	1.40E-10	1.76E-11	3.92E+02	1.39E+02	5.77E+00	6.91E-09	2.45E-09	1.02E-10			4.00E-05	1.30E+05	0.00E+00	0.00E+00	2.55E-06	8.96E-03
Selenium	3.01E-06	1.25E-07	1.58E-08	3.92E+02	1.39E+02	5.77E+00	6.19E-06	2.19E-06	9.12E-08			2.00E+01		0.00E+00	0.00E+00	4.56E-09	0.00E+00
Toluene	1.05E-06	4.38E-08	5.51E-09	3.92E+02	1.39E+02	5.77E+00	2.16E-06	7.65E-07	3.18E-08	3.70E+04		3.00E+02		5.84E-11	0.00E+00	1.06E-10	0.00E+00
PM2.5	9.47E-04	3.95E-05	4.97E-06	3.92E+02	1.39E+02	5.77E+00	-	-	2.87E-05								
													Total	***8.7E-04***	***3.0E-03***	***2.7E-04***	***2.0E-02***

a TAC emissions (lb/day) from BAAQMD 2018 emission inventory for Plant # 7658 (Chapel of the Chimes.

b The maximum unit concentration is the maximum modeled concentration using a 1.0 gram per second (g/s) emission rate.

c Maximum TAC concentrations calculated using the maximum unit concentration ($\mu g/m^3$)/(g/s) and the TAC emission rate (g/s).

d Reference Exposure Levels (RELs) and cancer potency factors from BAAQMD Regulation 2 Rule 5 - New Source Review of Toxic Air Contaminants.

Figure - Project Site, Chapel of the Chimes, On-site Receptors, and Locations of Maximum TAC Concentrations from Chapel of the Chimes

BAY AREA AIR QUALITY MANAGEMENT DISTRICT Printed: AUG 9, 2018
DETAIL POLLUTANTS - ABATED
MOST RECENT P/O APPROVED (2018)

Malm Fireplaces, Inc (P# 15978)

S#	SOURCE NAME / MATERIAL	SOURCE CODE / THROUGHPUT	DATE	POLLUTANT	CODE	LBS/DAY
1	Metal Coating Operation					
		SG700455				
				Acetone	455	1.81E-02
		SG92A455				
				Naphtha	188	5.41E-01
				Organic liquid evap - othe	201	5.94E-01
				Acetone	455	6.33E-01

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Risk & Hazard Stationary Source Inquiry Form

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

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

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

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

Table A: Requester Contact Information

Date of Request	**8/6/2018**
Contact Name	Mimi McNamara
Affiliation	Illingworth & Rodkin, Inc.
Phone	707-794-0400 x35
Email	mmcnamara@illingworthrodkin.com
Project Name	18-146 325 Yolanda Avenue
Address	325 Yolanda Avenue
City	Santa Rosa
County	Sonoma
Type (residential, commercial, mixed use, industrial, etc.)	Residential
Project Size (# of units or building square feet)	252
Comments:	

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

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

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

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

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

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

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

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

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

Submit forms, maps, and questions to Areana Flores at 415-749-4616, or aflores@baaqmd.gov

Table B: Google Earth data

Distance from Receptor (feet) or MEI[1]	Facility Name	Address	Plant No.	Cancer Risk[2]	Hazard Risk[2]	$PM_{2.5}$[2]	Source No.[4]	Type of Source[3]	Fuel Code[5]	Status/Comments
241	7-Eleven Store #33277	2648 Santa Rosa Avenue	111902	353.14062	1.7434	0	S1	Gas Dispensing Facility		Use GDF multiplier
430	Chapel of the Chimes	2601 Santa Rosa Avenue	7658	31.466774	2.8185	0.036271	S1,S2	Crematory		
320	Flyers #479	455 Yolanda Avenue	23123	1.5501185	0.0078	0	S23,S24	Gasoline Tank		
320	Flyers #479/3017	455 Yolanda Avenue	111340	26.485547	0.1308	0	S1	Gas Dispensing Facility		Use GDF multiplier
360	Council On Aging	30 Kawana Springs Road	18271	2.947	0.0044	0.0037	S1	Generator	98	Use Diesel IC multiplier
	~~SRT Collision Works~~	~~326 Yolanda Avenue~~	~~13085~~	~~NA~~	~~0.0011~~	~~NA~~				Shutdown
120	Malm Fireplaces, Inc	368 YOLANDA AVENUE	15978				S1	Metal Coating		See attached emissions file, use Beta Calculator, include OEHHA factor

Footnotes:

1. Maximally exposed individual
2. These Cancer Risk, Hazard Index, and PM2.5 columns represent the values in the Google Earth Plant Information Table.
3. Each plant may have multiple permits and sources.
4. Permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc.
5. Fuel codes: 98 = diesel, 189 = Natural Gas.
6. If a Health Risk Screening Assessment (HRSA) was completed for the source, the application number will be listed here.
7. The date that the HRSA was completed.
8. Engineer who completed the HRSA. For District purposes only.
9. All HRSA completed before 1/5/2010 need to be multiplied by an age sensitivity factor of 1.7.
10. The HRSA "Chronic Health" number represents the Hazard Index.
11. Further information about common sources:
    a. Sources that only include diesel internal combustion engines can be adjusted using the BAAQMD's Diesel Multiplier worksheet.
    b. The risk from natural gas boilers used for space heating when <25 MM BTU/hr would have an estimated cancer risk of one in a million or less, and a chronic hazard
    c. BAAQMD Reg 11 Rule 16 required that all co-residential (sharing a wall, floor, ceiling or is in the same building as a residential unit) dry cleaners cease use of perc on July 1, 2010. Therefore, there is no cancer risk, hazard or PM2.5 concentrations from co-residential dry cleaning businesses in the BAAQMD.
    d. Non co-residential dry cleaners must phase out use of perc by Jan. 1, 2023. Therefore, the risk from these dry cleaners does not need to be factored in over a 70-year period, but
    e. Gas stations can be adjusted using BAAQMD's Gas Station Distance Mulitplier worksheet.
    f. Unless otherwise noted, exempt sources are considered insignificant. See BAAQMD Reg 2 Rule 1 for a list of exempt sources.
    g. This spray booth is considered to be insignificant.

Date last updated:

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

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Date of Request	**8/6/2018**
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3. Find the project site in Google Earth by inputting the site's address in the Google Earth search box.

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

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

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

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

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

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Table B: Google Earth data

Distance from Receptor (feet) or MEI[1]	Facility Name	Address	Plant No.	Cancer Risk[2]	Hazard Risk[2]	$PM_{2.5}$[2]	Source No.[3]	Type of Source[4]	Fuel Code[5]	Status/Comments	**Project Site** Distance Adjustment Multiplier	Adjusted Cancer Risk Estimate	Adjusted Hazard Risk	Adjusted PM2.5	**Construction MEI** Distance from Receptor (feet) or MEI[1]	Distance Adjustment Multiplier	Adjusted Cancer Risk Estimate	Adjusted Hazard Risk	Adjusted PM2.5
320	Flyers #479/3017	455 Yolanda Avenue	111340	26.485547	0.1308		S1	Gas Dispensing Facility		Use GDF multiplier	0.096	2.54	0.01	0.00	800	0.021	0.55	0.07	
400	Council On Aging	30 Kawana Springs Road	18271	2.947	0.0044	0.0037	S1	Generator	98	Use Diesel IC multiplier	0.16	0.47	0.0007	0.0006	480	0.12	0.35	0.002	5.87924E-06
240	7-Eleven Store #33277	2648 Santa Rosa Avenue	111902	353.14062	1.7434		S1	Gas Dispensing Facility		Use GDF multiplier	Gas Station Analysis				Gas Station Analysis				
430	Chapel of the Chimes	2601 Santa Rosa Avenue	7658	31.466774	2.8185	0.036271	S1,S2	Crematory			Disperson modeling				Disperson modeling				
320	Flyers #479	455 Yolanda Avenue	23123	1.5501185	0.0078	0	S23,S24	Gasoline Tank			No distance adjustment				No distance adjustment				
120	Malm Fireplaces, Inc	368 YOLANDA AVENUE	15978	0.000	0.0000	0	S1	Metal Coating		See attached emissions file, use Beta Calculator, include OEHHA factor	No emissions				No Emissions				

Footnotes:

1. Maximally exposed individual
2. These Cancer Risk, Hazard Index, and PM2.5 columns represent the values in the Google Earth Plant Information Table.
3. Each plant may have multiple permits and sources.
4. Permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc.
5. Fuel codes: 98 = diesel, 189 = Natural Gas.
6. If a Health Risk Screening Assessment (HRSA) was completed for the source, the application number will be listed here.
7. The date that the HRSA was completed.
8. Engineer who completed the HRSA. For District purposes only.
9. All HRSA completed before 1/5/2010 need to be multiplied by an age sensitivity factor of 1.7.
10. The HRSA "Chronic Health" number represents the Hazard Index.
11. Further information about common sources:
    a. Sources that only include diesel internal combustion engines can be adjusted using the BAAQMD's Diesel Multiplier worksheet.
    b. The risk from natural gas boilers used for space heating when <25 MM BTU/hr would have an estimated cancer risk of one in a million or less, and a chronic hazard
    c. BAAQMD Reg 11 Rule 16 required that all co-residential (sharing a wall, floor, ceiling or is in the same building as a residential unit) dry cleaners cease use of perc on July 1, 2010. Therefore, there is no cancer risk, hazard or PM2.5 concentrations from co-residential dry cleaning businesses in the BAAQMD.
    d. Non co-residential dry cleaners must phase out use of perc by Jan. 1, 2023. Therefore, the risk from these dry cleaners does not need to be factored in over a 70-year period, but
    e. Gas stations can be adjusted using BAAQMD's Gas Station Distance Mulitplier worksheet.
    f. Unless otherwise noted, exempt sources are considered insignificant. See BAAQMD Reg 2 Rule 1 for a list of exempt sources.
    g. This spray booth is considered to be insignificant.

Date last updated:

BAAQMD Risk and Hazards Emissions Screening Calculator Instructions (Beta Version)

Based on emissions data provided by BAAQMD, this calculator will estimate screening-level cancer risk, PM2.5 concentrations, and non-cancer acute/chronic indices. This method should only be used for permitted facilites where screening-level risks have not already been calculated by BAAQMD and BAAQMD Health Risk Screening Assessments have not been completed.

BAAQMD staff will provide emissions information for each requested permitted facility. If a facility contains more than one permitted source, the plant's total emissions can be used, which BAAQMD staff will provide.

Below, note that there are individual worksheets for estimating cancer risk, non-cancer chronic hazard, non-cancer acute hazard and PM2.5 concentrations. To calculate risks, etc., enter daily emissions in each worksheet in column B for each chemical in the emissions printout. Sum the individual risk and hazard from each chemical to determine the total risks and hazards at the facility.

EXAMPLE:

BAY AREA AIR QUALITY MANAGEMENT DISTRICT Printed: DEC 22, 2011
DETAIL POLLUTANTS - ABATED
MOST RECENT P/O APPROVED (2011)

Plant Name: Example 1

S# SOURCE NAME
MATERIAL SOURCE CODE
THROUGHPUT DATE POLLUTANT CODE LBS/DAY

This plant contains 4 permitted sources. These source emissions are combined and presented in the plant total:

PLANT TOTAL:
Lbs/day Pollutant

Daily emissions

Benzene	41	1.26E-03
Formaldehyde	124	1.04E-04
Organics (part not spec el	990	6.06E-02
Arsenic (all)	1030	1.09E-06
Beryllium (all) pollutant	1040	6.41E-07
Cadmium	1070	2.73E-06
Chromium (hexavalent)	1095	5.65E-08
Lead (all) pollutant	1140	2.32E-06
Manganese	1160	3.64E-06
Nickel pollutant	1180	4.42E-05
Mercury (all) pollutant	1190	7.73E-07
Diesel Engine Exhaust Part	1350	6.31E-02
PAH's (non-speciated)	1840	5.77E-06
Nitrous Oxide (N2O)	2030	3.36E-04
Nitrogen Oxides (part not	2990	8.84E-01
Sulfur Dioxide (SO2)	3990	4.10E-04
Carbon Monoxide (CO) pollu	4990	1.92E-01
Carbon Dioxide, non-biogen	6960	4.20E+01
Methane (CH4)	6970	1.68E-03

Pollutant Name	Emission/lbs per day	Cancer Risk
ARSENIC	1.09E-06	5.50E-08
BENZENE	1.26E-03	1.22E-07
BERYLLIUM	6.41E-07	4.98E-09
CADMIUM	2.73E-06	3.79E-08
CHROMIUM	5.65E-08	2.67E-08
DIESEL PM	6.31E-02	6.70E-05
FORMALDEHYDE	1.04E-04	2.11E-09
LEAD	2.32E-06	2.65E-10
NICKEL	4.42E-05	3.73E-08
PAH'S	5.77E-06	5.77E-06
TOTAL:		**7.31E-05**

Using this screening approach, the cancer risk associated with this facility is estimated to be 7.31E-05, also expressed as **73 in a million**. If the facility contains only diesel back-up engines, the distance multiplier can be used to adjust the estimated cancer risk.

Note: Not all of the chemicals being emitted by the plant in this example are associated with cancer risk, therefore those chemicals are not included in the cancer risk estimation. Similarly, not all of the chemicals emitted by the plant in this example are associated with acute or chronic hazards.

Plug in the emissions in column B in the remaining tabs in the same fashion to estimate chronic and acute hazards, and PM2.5 concentrations.

Notes: Created 7/11/2012. Version 1.3 Beta. This calculator will create screening level values. More detailed modeling methods will result in more accurate values. For questions and comments contact Alison Kirk at akirk@baaqmd.gov.

Plant #: 15978
Plant Name: Malm Fireplaces Inc.
Number of Sources:

Pollutant Name	Emissions/lbs per day	Cancer Risk (in millions)
ACETALDEHYDE		0.00E+00
ACETAMIDE		0.00E+00
ACRYLAMIDE		0.00E+00
ACRYLONITRILE		0.00E+00
ALLYL CHLORIDE		0.00E+00
2-AMINOANTHRAQUINONE		0.00E+00
ANILINE		0.00E+00
ARSENIC AND COMPOUNDS (INORGANIC)[1,2]		0.00E+00
ASBESTOS[3]		0.00E+00
BENZENE[1]		0.00E+00
BENZIDINE (AND ITS SALTS) values also apply to:		0.00E+00
Benzidine based dyes		0.00E+00
Direct Black 38		0.00E+00
Direct Blue 6		0.00E+00
Direct Brown 95 (technical grade)		0.00E+00
BENZYL CHLORIDE		0.00E+00
BERYLLIUM AND COMPOUNDS[2]		0.00E+00
BIS(2-CHLOROETHYL)ETHER (Dichloroethyl ether)		0.00E+00
BIS(CHLOROMETHYL)ETHER		0.00E+00
POTASSIUM BROMATE		0.00E+00
1,3-BUTADIENE		0.00E+00
CADMIUM AND COMPOUNDS[2]		0.00E+00
CARBON TETRACHLORIDE[1] (Tetrachloromethane)		0.00E+00
CHLORINATED PARAFFINS		0.00E+00
4-CHLORO-O-PHENYLENEDIAMINE		0.00E+00
CHLOROFORM[1]		0.00E+00
PENTACHLOROPHENOL		0.00E+00
2,4,6-TRICHLOROPHENOL		0.00E+00
p-CHLORO-o-TOLUIDINE		0.00E+00
CHROMIUM 6+2		0.00E+00
Barium chromate2		0.00E+00
Calcium chromate2		0.00E+00
Lead chromate2		0.00E+00
Sodium dichromate2		0.00E+00
Strontium chromate2		0.00E+00
CHROMIC TRIOXIDE (as chromic acid mist)		0.00E+00
p-CRESIDINE		0.00E+00
CUPFERRON		0.00E+00
2,4-DIAMINOANISOLE		0.00E+00
2,4-DIAMINOTOLUENE		0.00E+00
1,2-DIBROMO-3-CHLOROPROPANE (DBCP)		0.00E+00
1,4-DICHLOROBENZENE		0.00E+00
3,3-DICHLOROBENZIDINE		0.00E+00
1,1,-DICHLOROETHANE (Ethylidene dichloride)		0.00E+00
DI(2-ETHYLHEXYL)PHTHALATE (DEHP)		0.00E+00
p-DIMETHYLAMINOAZOBENZENE		0.00E+00
2,4-DINITROTOLUENE		0.00E+00
1,4-DIOXANE (1,4-Diethylene dioxide)		0.00E+00
EPICHLOROHYDRIN (1-Chloro-2,3-epoxypropane)		0.00E+00
ETHYL BENZENE		0.00E+00
ETHYLENE DIBROMIDE (1,2-Dibromoethane)		0.00E+00
ETHYLENE DICHLORIDE (1,2-Dichloroethane)		0.00E+00
ETHYLENE OXIDE (1,2-Epoxyethane)		0.00E+00
ETHYLENE THIOUREA		0.00E+00
FORMALDEHYDE		0.00E+00
HEXACHLOROBENZENE		0.00E+00
HEXACHLOROCYCLOHEXANES (mixed or technical grade)		0.00E+00
alpha-HEXACHLOROCYCLOHEXANE		0.00E+00
beta- HEXACHLOROCYCLOHEXANE		0.00E+00
gamma-HEXACHLOROCYCLOHEXANE (Lindane)		0.00E+00
HYDRAZINE		0.00E+00
LEAD AND COMPOUNDS 2,4 (inorganic) values also apply to:		0.00E+00
Lead acetate2		0.00E+00
Lead phosphate2		0.00E+00
Lead subacetate2		0.00E+00
METHYL tertiary-BUTYL ETHER		0.00E+00
4,4'-METHYLENE BIS (2-CHLOROANILINE) (MOCA)		0.00E+00
METHYLENE CHLORIDE (Dichloromethane)		0.00E+00
4,4'-METHYLENE DIANILINE (AND ITS DICHLORIDE)		0.00E+00
MICHLER'S KETONE (4,4'-Bis(dimethylamino)benzophenone)		0.00E+00
N-NITROSODI-n-BUTYLAMINE		0.00E+00
N-NITROSODI-n-PROPYLAMINE		0.00E+00
N-NITROSODIETHYLAMINE		0.00E+00
N-NITROSODIMETHYLAMINE		0.00E+00
N-NITROSODIPHENYLAMINE		0.00E+00
N-NITROSO-N-METHYLETHYLAMINE		0.00E+00
N-NITROSOMORPHOLINE		0.00E+00
N-NITROSOPIPERIDINE		0.00E+00
N-NITROSOPYRROLIDINE		0.00E+00
NICKEL AND COMPOUNDS2 (values also apply to:)		0.00E+00
Nickel acetate2		0.00E+00
Nickel carbonate2		0.00E+00
Nickel carbonyl2		0.00E+00
Nickel hydroxide2		0.00E+00
Nickelocene2		0.00E+00
NICKEL OXIDE2		0.00E+00
Nickel refinery dust from the pyrometallurgical process2		0.00E+00
Nickel subsulfide2		0.00E+00
p-NITROSODIPHENYLAMINE		0.00E+00
PARTICULATE EMISSIONS FROM DIESEL-FUELED ENGINES		0.00E+00
PERCHLOROETHYLENE (Tetrachloroethylene)		0.00E+00
PCB (POLYCHLORINATED BIPHENYLS) [low risk] 2,6		0.00E+00
PCB (POLYCHLORINATED BIPHENYLS) [high risk] 2,6		0.00E+00
POLYCHLORINATED DIBENZO-P-DIOXINS (PCDD)(AS 2,3,7,8-PCDD EQUIV) 2,7		0.00E+00
2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN2,7		0.00E+00
POLYCHLORINATED DIBENZOFURANS (PCDF)(AS 2,3,7,8-PCDD EQUIV) 2,7		0.00E+00
2,3,7,8-TETRACHLORODIBENZOFURAN2,7		0.00E+00
POLYCYCLIC AROMATIC HYDROCARBON2 (PAH) (AS B(a)P-EQUIV)5		0.00E+00
BENZO(A)PYRENE2,5		0.00E+00
NAPHTHALENE		0.00E+00
1,3-PROPANE SULTONE		0.00E+00
PROPYLENE OXIDE		0.00E+00
1,1,2,2-TETRACHLOROETHANE		0.00E+00
THIOACETAMIDE		0.00E+00
Toluene diisocyantates		0.00E+00
TOLUENE-2,4-DIISOCYANATE		0.00E+00
TOLUENE-2,6-DIISOCYANATE		0.00E+00
1,1,2-TRICHLOROETHANE (Vinyl trichloride)		0.00E+00
TRICHLOROETHYLENE		0.00E+00
URETHANE (Ethyl carbamate)		0.00E+00
VINYL CHLORIDE (Chloroethylene)		0.00E+00
	TOTAL:	0.00E+00

Plant #: 15978
Plant Name: Malm Fireplaces Inc.
Number of Sources:

Pollutant Name	Emission/lbs per day	Chronic Hazard
ACETALDEHYDE	0	0
ACROLEIN		0
ACRYLONITRILE		0
AMMONIA		0
ARSENIC AND COMPOUNDS (INORGANIC)1,2		0
ARSINE		0
BENZENE1		0
BERYLLIUM AND COMPOUNDS2		0
1,3-BUTADIENE		0
CADMIUM AND COMPOUNDS2		0
CARBON DISULFIDE1		0
CARBON TETRACHLORIDE1 (Tetrachloromethane)		0
CHLORINE		0
CHLORINE DIOXIDE		0
CHLOROBENZENE		0
CHLOROFORM1		0
2,3,4,6-Tetrachlorophenol		0
CHLOROPICRIN		0
CHROMIUM 6+2		0
Barium chromate2		0
Calcium chromate2		0
Lead chromate2		0
Sodium dichromate2		0
Strontium chromate2		0
CHROMIC TRIOXIDE (as chromic acid mist)		0
CRESOLS		0
M-CRESOL		0
O-CRESOL		0
P-CRESOL		0
Cyanide And Compounds (inorganic)		0
HYDROGEN CYANIDE (Hydrocyanic acid)		0
1,4-DICHLOROBENZENE		0
DIETHANOLAMINE		0
DIMETHYLAMINE		0
N,N-DIMETHYL FORMAMIDE		0
1,4-DIOXANE (1,4-Diethylene dioxide)		0
EPICHLOROHYDRIN (1-Chloro-2,3-epoxypropane)		0
1,2-EPOXYBUTANE		0
ETHYL BENZENE		0
ETHYL CHLORIDE (Chloroethane)		0
ETHYLENE DIBROMIDE (1,2-Dibromoethane)		0
ETHYLENE DICHLORIDE (1,2-Dichloroethane)		0
ETHYLENE GLYCOL		0
ETHYLENE OXIDE (1,2-Epoxyethane)		0
Fluorides		0
HYDROGEN FLUORIDE (Hydrofluoric acid)		0
FORMALDEHYDE		0
GASOLINE VAPORS		0
GLUTARALDEHYDE		0
ETHYLENE GLYCOL ETHYL ETHER – EGEE1		0
ETHYLENE GLYCOL ETHYL ETHER ACETATE – EGEEA1		0
ETHYLENE GLYCOL METHYL ETHER – EGME1		0
ETHYLENE GLYCOL METHYL ETHER ACETATE – EGMEA		0
n-HEXANE		0
HYDRAZINE		0
HYDROCHLORIC ACID (Hydrogen chloride)		0
HYDROGEN SULFIDE		0
ISOPHORONE		0
ISOPROPYL ALCOHOL (Isopropanol)		0
MALEIC ANHYDRIDE		0
MANGANESE AND COMPOUNDS		0
MERCURY AND COMPOUNDS (INORGANIC) values also apply to:		0
Mercuric chloride		0
METHANOL		0
METHYL BROMIDE (Bromomethane)		0
METHYL tertiary-BUTYL ETHER		0
METHYL CHLOROFORM (1,1,1-Trichloroethane)		0
METHYL ISOCYANATE		0
METHYLENE CHLORIDE (Dichloromethane)		0
4,4'-METHYLENE DIANILINE (AND ITS DICHLORIDE)		0
METHYLENE DIPHENYL ISOCYANATE		0
NICKEL AND COMPOUNDS2 (values also apply to:)		0
Nickel acetate2		0
Nickel carbonate2		0
Nickel carbonyl2		0
Nickel hydroxide2		0
Nickelocene2		0
NICKEL OXIDE2		0
Nickel refinery dust from the pyrometallurgical process2		0
Nickel subsulfide2		0
NITROGEN DIOXIDE		0
PARTICULATE EMISSIONS FROM DIESEL-FUELED ENGINES		0
PERCHLOROETHYLENE (Tetrachloroethylene)		0
PHENOL		0
PHOSPHINE		0
PHOSPHORIC ACID		0
PHOSPHORUS (WHITE)		0
PHTHALIC ANHYDRIDE		0
POLYCHLORINATED DIBENZO-P-DIOXINS (PCDD)(AS 2,3,7,8-PCDD EQUIV) 2,7		0
2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,4,6,7,8,9-OCTACHLORODIBENZO-P-DIOXIN2,7		0
POLYCHLORINATED DIBENZOFURANS (PCDF)(AS 2,3,7,8-PCDD EQUIV) 2,7		0
2,3,7,8-TETRACHLORODIBENZOFURAN2,7		0
1,2,3,7,8-PENTACHLORODIBENZOFURAN2,7		0
2,3,4,7,8-PENTACHLORODIBENZOFURAN2,7		0
1,2,3,4,7,8-HEXACHLORODIBENZOFURAN2,7		0
1,2,3,6,7,8-HEXACHLORODIBENZOFURAN2,7		0
1,2,3,7,8,9-HEXACHLORODIBENZOFURAN2,7		0
2,3,4,6,7,8-HEXACHLORODIBENZOFURAN2,7		0
1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN2,7		0
1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN2,7		0
1,2,3,4,6,7,8,9-OCTACHLORODIBENZOFURAN2,7		0
NAPHTHALENE		0
PROPYLENE (PROPENE)		0
PROPYLENE GLYCOL MONOMETHYL ETHER		0
PROPYLENE OXIDE		0
SELENIUM AND COMPOUNDS		0
Selenium sulfide		0
SILICA (Crystalline, Respirable)		0
STYRENE		0
SULFUR DIOXIDE		0
SULFURIC ACID AND OLEUM		0
SULFURIC ACID		0
SULFUR TRIOXIDE		0
OLEUM		0
TOLUENE		0
Toluene diisocyantates		0
TOLUENE-2,4-DIISOCYANATE		0
TOLUENE-2,6-DIISOCYANATE		0
TRICHLOROETHYLENE		0
TRIETHYLAMINE		0
VINYL ACETATE		0
VINYLIDENE CHLORIDE (1,1-Dichloroethylene)		0
XYLENES (mixed isomers)		0
m-XYLENE		0
o-XYLENE		0
p-XYLENE		0
	TOTAL:	0.00E+00

Plant #: 15978
Plant Name: Malm Fireplaces Inc.
Number of Sources:

Pollutant Name	Emission/lbs per day	Acute Hazard
ACETALDEHYDE	0	0
ACROLEIN		0
ACRYLIC ACID		0
AMMONIA		0
ARSENIC AND COMPOUNDS (INORGANIC)1,2		0
ARSINE		0
BENZENE1		0
BENZYL CHLORIDE		0
CARBON DISULFIDE1		0
CARBON MONOXIDE		0
CARBON TETRACHLORIDE1 (Tetrachloromethane)		0
CHLORINE		0
CHLOROFORM1		0
CHLOROPICRIN		0
COPPER AND COMPOUNDS		0
Cyanide And Compounds (inorganic)		0
HYDROGEN CYANIDE (Hydrocyanic acid)		0
1,4-DIOXANE (1,4-Diethylene dioxide)		0
EPICHLOROHYDRIN (1-Chloro-2,3-epoxypropane)		0
Fluorides		0
HYDROGEN FLUORIDE (Hydrofluoric acid)		0
FORMALDEHYDE		0
ETHYLENE GLYCOL BUTYL ETHER – EGBE		0
ETHYLENE GLYCOL ETHYL ETHER – EGEE1		0
ETHYLENE GLYCOL ETHYL ETHER ACETATE – EGEEA1		0
ETHYLENE GLYCOL METHYL ETHER – EGME1		0
HYDROCHLORIC ACID (Hydrogen chloride)		0
HYDROGEN SULFIDE		0
ISOPROPYL ALCOHOL (Isopropanol)		0
MERCURY AND COMPOUNDS (INORGANIC) values also apply to:		0
Mercuric chloride		0
METHANOL		0
METHYL BROMIDE (Bromomethane)		0
METHYL CHLOROFORM (1,1,1-Trichloroethane)		0
METHYL ETHYL KETONE (2-Butanone)		0
METHYLENE CHLORIDE (Dichloromethane)		0
NICKEL AND COMPOUNDS2 (values also apply to:)		0
Nickel acetate2		0
Nickel carbonate2		0
Nickel carbonyl2		0
Nickel hydroxide2		0
Nickelocene2		0
NICKEL OXIDE2		0
Nickel refinery dust from the pyrometallurgical process2		0
Nickel subsulfide2		0
NITRIC ACID		0
OZONE		0
PROPYLENE OXIDE		0
HYDROGEN SELENIDE		0
SODIUM HYDROXIDE		0
STYRENE		0
SULFATES		0
SULFUR DIOXIDE		0
SULFURIC ACID AND OLEUM		0
SULFURIC ACID		0
SULFUR TRIOXIDE		0
OLEUM		0
TOLUENE		0
TRIETHYLAMINE		0
Vanadium (fume or dust)		0
VANADIUM PENTOXIDE		0
VINYL CHLORIDE (Chloroethylene)		0
XYLENES (mixed isomers)		0
m-XYLENE		0
o-XYLENE		0
p-XYLENE		0
	TOTAL:	0.00E+00

Plant #: 15978

Plant Name: Malm Fireplaces Inc.

Number of Sources:

Diesel PM Concentrations	Emissions (lbs/day)	M2.5 Concentration (ug/m3)
		0
		0
		0
		0
		0
		0
		0
		0
		0
		0
		0
		0
		0
TOTAL:		0

Distance meters	Distance feet	Distance adjustment multiplier	Enter Risk or Hazard	Adjusted Risk or Hazard
20	66	1.000		0
25	82	0.728		0
30	98	0.559		0
35	115	0.445		0
40	131	0.365		0
45	148	0.305		0
50	164	0.260		0
55	180	0.225		0
60	197	0.197		0
65	213	0.174		0
70	230	0.155		0
75	246	0.139		0
80	262	0.126		0
85	279	0.114		0
90	295	0.104		0
95	312	0.096		0
100	328	0.088		0
105	344	0.082		0
110	361	0.076		0
115	377	0.071		0
120	394	0.066		0
125	410	0.062		0
130	426	0.058		0
135	443	0.055		0
140	459	0.052		0
145	476	0.049		0
150	492	0.046		0
155	508	0.044		0
160	525	0.042		0
165	541	0.040		0
170	558	0.038		0
175	574	0.036		0
180	590	0.034		0
185	607	0.033		0
190	623	0.031		0
195	640	0.030		0
200	656	0.029		0
205	672	0.028		0
210	689	0.027		0
215	705	0.026		0
220	722	0.025		0
225	738	0.024		0
230	754	0.023		0
235	771	0.022		0
240	787	0.022		0
245	804	0.021		0
250	820	0.020		0
255	836	0.020		0
260	853	0.019		0
265	869	0.018		0
270	886	0.018		0
275	902	0.017		0
280	918	0.017		0
285	935	0.016		0
290	951	0.016		0
295	968	0.015		0
300	984	0.015		0

Distance meters	Distance feet	Distance adjustment multiplier	Enter Risk or Hazard	Adjusted Risk or Hazard	Enter PM2.5 Concentration	Adjusted PM2.5 Concentration
25	82	0.85		0		0
30	98	0.73		0		0
35	115	0.64		0		0
40	131	0.58		0		0
50	164	0.5		0		0
60	197	0.41		0		0
70	230	0.31		0		0
80	262	0.28		0		0
90	295	0.25		0		0
100	328	0.22		0		0
110	361	0.18		0		0
120	394	0.16		0		0
130	426	0.15		0		0
140	459	0.14		0		0
150	492	0.12		0		0
160	525	0.1		0		0
180	590	0.09		0		0
200	656	0.08		0		0
220	722	0.07		0		0
240	787	0.06		0		0
260	853	0.05		0		0
280	918	0.04		0		0

325 Yolanda Ave

6 Pump 12 Nozzle Fueling Station

BAAQMD Evaluation

Controlled Rate (for all activities) =			0.67	lbs/10^3 gal throughput
Estimated Project Throughput	10000	10^3 gal/year		
Annual VOC Emissions	6,700	pounds/year	18.4	pounds/day
	3.35	tons/year		
Annual Benzene Emissions	0.02		0.101	pounds/day

BAAQMD reports
emission rates for fueling stations of 0.00369 pounds of benzene per thousand gallons of fuel handled13

PlantNo	**111902**
Name	**7-Eleven Store #33277**
Address	**2648 Santa Rosa Avenue**
City	**Santa Rosa**

BAAQMD 2013. EVALUATION REPORT, Safeway Fuel Center #3011 Facility ID#200026 Application #405215 at S. McDowell Blvd & Maria Drive, Petaluma, CA 94954. Accessed from http://www.baaqmd.gov/Divisions/Engineering/Public-Notices-on-Permits/2013/082213-405215/Safeway-Fuel-Center-3011.aspx on April 15, 2014.

Community Risk

50 ft Source level	MEI		
1.34E-05	single unit with OEHHA Adj.		
	1.86E-06	250 ft	Project Senstive Receptor
	2.99E-07	780 ft	Construction MEI

Bay Area Air Quality Management District

Roadway Screening Analysis Calculator

County specific tables containing estimates of risk and hazard impacts from roadways in the Bay Area.

INSTRUCTIONS:

Input the site-specific characteristics of your project by using the drop down menu in the "Search Parameter" box. We recommend that this analysis be used for roadways with 10,000 AADT and above.

• County: Select the County where the project is located. The calculator is only applicable for projects within the nine Bay Area counties.

• Roadway Direction: Select the orientation that best matches the roadway. If the roadway orientation is neither clearly north-south nor east-west, use the highest values predicted from either orientation.

• Side of the Roadway: Identify on which side of the roadway the project is located.

• Distance from Roadway: Enter the distance in feet from the nearest edge of the roadway to the project site. The calculator estimates values for distances greater than 10 feet and less than 1000 feet. For distances greater than 1000 feet, the user can choose to extrapolate values using a distribution curve or apply 1000 feet values for greater distances.

• Annual Average Daily Traffic (ADT): Enter the annual average daily traffic on the roadway. These data may be collected from the city or the county (if the area is unincorporated).

When the user has completed the data entries, the screening level PM2.5 annual average concentration and the cancer risk results will appear in the Results Box on the right. Please note that the roadway tool is not applicable for California State Highways and the District refers the user to the Highway Screening Analysis Tool at: http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx.

Notes and References listed below the Search Boxes

Search Parameters

County	Sonoma
Roadway Direction	East-West
Side of the Roadway	South
Distance from Roadway	580 feet
Annual Average Daily Traffic (ADT)	13,365

Results

Sonoma County

EAST-WEST DIRECTIONAL ROADWAY

PM2.5 annual average

0.020 ($\mu g/m^3$)

Cancer Risk

0.85 (per million)

Kawana Springs Road (MEI)

Cumulative plus project volumes from traffic report

Data for Sonoma County based on meteorological data collected from Santa Rosa in 2005

Adjusted for 2015 OEHHA and EMFAC2014 for 2018

0.59

(per million)

Note that EMFAC2014 predicts DSL PM2.5 aggragate rates in 2018 that are 46% of EMFAC2011 for 2014. TOG gasoline rates are 56% of EMFAC2011 year 2014 rates. This is for light- and medium-duty vehciles traveling at 30 mph for Bay Area

Notes and References:

1. Emissions were developed using EMFAC2011 for fleet mix in 2014 assuming 10,000 AADT and includes impacts from diesel and gasoline vehicle exhaust, brake and tire wear, and resuspended dust.
2. Roadways were modeled using ~~CALINE4~~ Cal3qhcr air dispersion model assuming a source length of one kilometer. Meteorological data used to estimate the screening values are noted at the bottom of the "Results" box.
3. Cancer risks were estimated for 70 year lifetime exposure starting in 2014 that includes sensitivity values for early life exposures and OEHHA toxicity values adopted in 2013.

Bay Area Air Quality Management District

Roadway Screening Analysis Calculator

County specific tables containing estimates of risk and hazard impacts from roadways in the Bay Area.

INSTRUCTIONS:

Input the site-specific characteristics of your project by using the drop down menu in the "Search Parameter" box. We recommend that this analysis be used for roadways with 10,000 AADT and above.

• County: Select the County where the project is located. The calculator is only applicable for projects within the nine Bay Area counties.

• Roadway Direction: Select the orientation that best matches the roadway. If the roadway orientation is neither clearly north-south nor east-west, use the highest values predicted from either orientation.

• Side of the Roadway: Identify on which side of the roadway the project is located.

• Distance from Roadway: Enter the distance in feet from the nearest edge of the roadway to the project site. The calculator estimates values for distances greater than 10 feet and less than 1000 feet. For distances greater than 1000 feet, the user can choose to extrapolate values using a distribution curve or apply 1000 feet values for greater distances.

• Annual Average Daily Traffic (ADT): Enter the annual average daily traffic on the roadway. These data may be collected from the city or the county (if the area is unincorporated).

When the user has completed the data entries, the screening level PM2.5 annual average concentration and the cancer risk results will appear in the Results Box on the right. Please note that the roadway tool is not applicable for California State Highways and the District refers the user to the Highway Screening Analysis Tool at: http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx.

Notes and References listed below the Search Boxes

Search Parameters

County	Sonoma
Roadway Direction	East-West
Side of the Roadway	South
Distance from Roadway	700 feet
Annual Average Daily Traffic (ADT)	13,365

Results

Sonoma County

EAST-WEST DIRECTIONAL ROADWAY

PM2.5 annual average

0.017 ($\mu g/m^3$)

Cancer Risk

0.70 (per million)

Kawana Springs Road (Project)

Cumulative plus project volumes from traffic report

Data for Sonoma County based on meteorological data collected from Santa Rosa in 2005

Adjusted for 2015 OEHHA and EMFAC2014 for 2018

0.48

(per million)

Note that EMFAC2014 predicts DSL PM2.5 aggragate rates in 2018 that are 46% of EMFAC2011 for 2014. TOG gasoline rates are 56% of EMFAC2011 year 2014 rates. This is for light- and medium-duty vehciles traveling at 30 mph for Bay Area

Notes and References:

1. Emissions were developed using EMFAC2011 for fleet mix in 2014 assuming 10,000 AADT and includes impacts from diesel and gasoline vehicle exhaust, brake and tire wear, and resuspended dust.
2. Roadways were modeled using ~~CALINE4~~ Cal3qhcr air dispersion model assuming a source length of one kilometer. Meteorological data used to estimate the screening values are noted at the bottom of the "Results" box.
3. Cancer risks were estimated for 70 year lifetime exposure starting in 2014 that includes sensitivity values for early life exposures and OEHHA toxicity values adopted in 2013.

Bay Area Air Quality Management District

Roadway Screening Analysis Calculator

County specific tables containing estimates of risk and hazard impacts from roadways in the Bay Area.

INSTRUCTIONS:

Input the site-specific characteristics of your project by using the drop down menu in the "Search Parameter" box. We recommend that this analysis be used for roadways with 10,000 AADT and above.

• County: Select the County where the project is located. The calculator is only applicable for projects within the nine Bay Area counties.

• Roadway Direction: Select the orientation that best matches the roadway. If the roadway orientation is neither clearly north-south nor east-west, use the highest values predicted from either orientation.

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• Annual Average Daily Traffic (ADT): Enter the annual average daily traffic on the roadway. These data may be collected from the city or the county (if the area is unincorporated).

When the user has completed the data entries, the screening level PM2.5 annual average concentration and the cancer risk results will appear in the Results Box on the right. Please note that the roadway tool is not applicable for California State Highways and the District refers the user to the Highway Screening Analysis Tool at: http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx.

Notes and References listed below the Search Boxes

Search Parameters

County	Sonoma
Roadway Direction	North-South
Side of the Roadway	East
Distance from Roadway	730 feet
Annual Average Daily Traffic (ADT)	32,045

Results

Sonoma County

NORTH-SOUTH DIRECTIONAL ROADWAY

PM2.5 annual average

0.066 ($\mu g/m^3$)

Cancer Risk

2.73 (per million)

Santa Rosa Ave (MEI)

Cumulative plus project volumes from traffic report

Data for Sonoma County based on meteorological data collected from Santa Rosa in 2005

Adjusted for 2015 OEHHA and EMFAC2014 for 2018

1.88

(per million)

Note that EMFAC2014 predicts DSL PM2.5 aggragate rates in 2018 that are 46% of EMFAC2011 for 2014. TOG gasoline rates are 56% of EMFAC2011 year 2014 rates. This is for light- and medium-duty vehciles traveling at 30 mph for Bay Area

Notes and References:

1. Emissions were developed using EMFAC2011 for fleet mix in 2014 assuming 10,000 AADT and includes impacts from diesel and gasoline vehicle exhaust, brake and tire wear, and resuspended dust.
2. Roadways were modeled using ~~CALINE4~~ Cal3qhcr air dispersion model assuming a source length of one kilometer. Meteorological data used to estimate the screening values are noted at the bottom of the "Results" box.
3. Cancer risks were estimated for 70 year lifetime exposure starting in 2014 that includes sensitivity values for early life exposures and OEHHA toxicity values adopted in 2013.

Bay Area Air Quality Management District

Roadway Screening Analysis Calculator

County specific tables containing estimates of risk and hazard impacts from roadways in the Bay Area.

INSTRUCTIONS:

Input the site-specific characteristics of your project by using the drop down menu in the "Search Parameter" box. We recommend that this analysis be used for roadways with 10,000 AADT and above.

• County: Select the County where the project is located. The calculator is only applicable for projects within the nine Bay Area counties.

• Roadway Direction: Select the orientation that best matches the roadway. If the roadway orientation is neither clearly north-south nor east-west, use the highest values predicted from either orientation.

• Side of the Roadway: Identify on which side of the roadway the project is located.

• Distance from Roadway: Enter the distance in feet from the nearest edge of the roadway to the project site. The calculator estimates values for distances greater than 10 feet and less than 1000 feet. For distances greater than 1000 feet, the user can choose to extrapolate values using a distribution curve or apply 1000 feet values for greater distances.

• Annual Average Daily Traffic (ADT): Enter the annual average daily traffic on the roadway. These data may be collected from the city or the county (if the area is unincorporated).

When the user has completed the data entries, the screening level PM2.5 annual average concentration and the cancer risk results will appear in the Results Box on the right. Please note that the roadway tool is not applicable for California State Highways and the District refers the user to the Highway Screening Analysis Tool at: http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx.

Notes and References listed below the Search Boxes

Search Parameters

County	Sonoma
Roadway Direction	North-South
Side of the Roadway	East
Distance from Roadway	450 feet
Annual Average Daily Traffic (ADT)	32,045

Results

Sonoma County

NORTH-SOUTH DIRECTIONAL ROADWAY

PM2.5 annual average

0.104 ($\mu g/m^3$)

Cancer Risk

4.25 (per million)

Santa Rosa Ave (Project Site)

Cumulative plus project volumes from traffic report

Data for Sonoma County based on meteorological data collected from Santa Rosa in 2005

Adjusted for 2015 OEHHA and EMFAC2014 for 2018

2.92

(per million)

Note that EMFAC2014 predicts DSL PM2.5 aggragate rates in 2018 that are 46% of EMFAC2011 for 2014. TOG gasoline rates are 56% of EMFAC2011 year 2014 rates. This is for light- and medium-duty vehciles traveling at 30 mph for Bay Area

Notes and References:

1. Emissions were developed using EMFAC2011 for fleet mix in 2014 assuming 10,000 AADT and includes impacts from diesel and gasoline vehicle exhaust, brake and tire wear, and resuspended dust.
2. Roadways were modeled using ~~CALINE4~~ Cal3qhcr air dispersion model assuming a source length of one kilometer. Meteorological data used to estimate the screening values are noted at the bottom of the "Results" box.
3. Cancer risks were estimated for 70 year lifetime exposure starting in 2014 that includes sensitivity values for early life exposures and OEHHA toxicity values adopted in 2013.

Bay Area Air Quality Management District

Roadway Screening Analysis Calculator

County specific tables containing estimates of risk and hazard impacts from roadways in the Bay Area.

INSTRUCTIONS:

Input the site-specific characteristics of your project by using the drop down menu in the "Search Parameter" box. We recommend that this analysis be used for roadways with 10,000 AADT and above.

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• Annual Average Daily Traffic (ADT): Enter the annual average daily traffic on the roadway. These data may be collected from the city or the county (if the area is unincorporated).

When the user has completed the data entries, the screening level PM2.5 annual average concentration and the cancer risk results will appear in the Results Box on the right. Please note that the roadway tool is not applicable for California State Highways and the District refers the user to the Highway Screening Analysis Tool at: http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx.

Notes and References listed below the Search Boxes

Search Parameters

County	Sonoma
Roadway Direction	East-West
Side of the Roadway	North
Distance from Roadway	570 feet
Annual Average Daily Traffic (ADT)	15,930

Results

Sonoma County

EAST-WEST DIRECTIONAL ROADWAY

PM2.5 annual average

0.056 ($\mu g/m^3$)

Cancer Risk

2.13 (per million)

Yolanda Ave (MEI)

Cumulative plus project volumes from traffic report

Data for Sonoma County based on meteorological data collected from Santa Rosa in 2005

Adjusted for 2015 OEHHA and EMFAC2014 for 2018

1.46

(per million)

Note that EMFAC2014 predicts DSL PM2.5 aggragate rates in 2018 that are 46% of EMFAC2011 for 2014. TOG gasoline rates are 56% of EMFAC2011 year 2014 rates. This is for light- and medium-duty vehciles traveling at 30 mph for Bay Area

Notes and References:

1. Emissions were developed using EMFAC2011 for fleet mix in 2014 assuming 10,000 AADT and includes impacts from diesel and gasoline vehicle exhaust, brake and tire wear, and resuspended dust.
2. Roadways were modeled using ~~CALINE4~~ Cal3qhcr air dispersion model assuming a source length of one kilometer. Meteorological data used to estimate the screening values are noted at the bottom of the "Results" box.
3. Cancer risks were estimated for 70 year lifetime exposure starting in 2014 that includes sensitivity values for early life exposures and OEHHA toxicity values adopted in 2013.

Bay Area Air Quality Management District

Roadway Screening Analysis Calculator

County specific tables containing estimates of risk and hazard impacts from roadways in the Bay Area.

INSTRUCTIONS:

Input the site-specific characteristics of your project by using the drop down menu in the "Search Parameter" box. We recommend that this analysis be used for roadways with 10,000 AADT and above.

• County: Select the County where the project is located. The calculator is only applicable for projects within the nine Bay Area counties.

• Roadway Direction: Select the orientation that best matches the roadway. If the roadway orientation is neither clearly north-south nor east-west, use the highest values predicted from either orientation.

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• Annual Average Daily Traffic (ADT): Enter the annual average daily traffic on the roadway. These data may be collected from the city or the county (if the area is unincorporated).

When the user has completed the data entries, the screening level PM2.5 annual average concentration and the cancer risk results will appear in the Results Box on the right. Please note that the roadway tool is not applicable for California State Highways and the District refers the user to the Highway Screening Analysis Tool at: http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx.

Notes and References listed below the Search Boxes

Search Parameters

County	Sonoma
Roadway Direction	East-West
Side of the Roadway	North
Distance from Roadway	50 feet
Annual Average Daily Traffic (ADT)	15,930

Results

Sonoma County

EAST-WEST DIRECTIONAL ROADWAY

PM2.5 annual average

0.249 ($\mu g/m^3$)

Cancer Risk

9.36 (per million)

Yolanda Ave (Project Site)

Cumulative plus project volumes from traffic report

Data for Sonoma County based on meteorological data collected from Santa Rosa in 2005

Adjusted for 2015 OEHHA and EMFAC2014 for 2018

6.43

(per million)

Note that EMFAC2014 predicts DSL PM2.5 aggragate rates in 2018 that are 46% of EMFAC2011 for 2014. TOG gasoline rates are 56% of EMFAC2011 year 2014 rates. This is for light- and medium-duty vehciles traveling at 30 mph for Bay Area

Notes and References:

1. Emissions were developed using EMFAC2011 for fleet mix in 2014 assuming 10,000 AADT and includes impacts from diesel and gasoline vehicle exhaust, brake and tire wear, and resuspended dust.
2. Roadways were modeled using ~~CALINE4~~ Cal3qhcr air dispersion model assuming a source length of one kilometer. Meteorological data used to estimate the screening values are noted at the bottom of the "Results" box.
3. Cancer risks were estimated for 70 year lifetime exposure starting in 2014 that includes sensitivity values for early life exposures and OEHHA toxicity values adopted in 2013.

EMFAC2014 (v1.0.7) Emission Rates
Region Type: County
Region: Sonoma
Calendar Year: 2021
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW

Area	CalYr	Season	Veh	Fuel	Speed	VMT	Assumed fraction of Vehicles	ROG_RUNEX	TOG_RUNEX	NOX_RUNEX	CO2_RUNEX(Pavley I+LCFS)	PM10_RUNEX	PM2_5_RUNEX
Sonoma	2019	Annual	LDA	GAS	5		0.58	0.0771	0.1124	0.1131	870.2579	0.0118	0.0109
Sonoma	2019	Annual	LDA	DSL	5		0.01	0.2541	0.2892	0.2307	681.4497	0.0691	0.0661
Sonoma	2019	Annual	LDT1	GAS	5		0.05	0.1641	0.2392	0.2761	1037.6601	0.0156	0.0143
Sonoma	2019	Annual	LDT1	DSL	5		0	0.8631	0.9826	0.7367	919.5273	0.6131	0.5866
Sonoma	2019	Annual	LDT2	GAS	5		0.18	0.1002	0.1461	0.1769	1161.7423	0.0116	0.0106
Sonoma	2019	Annual	LDT2	DSL	5		0	0.2295	0.3258	0.3690	1582.9182	0.0121	0.0111
Sonoma	2019	Annual	MDV	GAS	5		0.12	0.1997	0.2273	0.1498	1039.4394	0.0193	0.0185
Sonoma	2019	Annual	MDV	DSL	5		0	0.2111	0.2403	0.1690	918.3915	0.0178	0.0171
Sonoma	2019	Annual	MCY	GAS	5		0.01	13.5165	16.4807	1.6003	548.4215	0.0110	0.0104
Sonoma	2019	Annual	LHDT1	GAS	5		0.02	15.57782	13.54362	0.79759	1395.28683	0.01115	0.01025
Sonoma	2019	Annual	LHDT1	DSL	5		0.02	0.83712	0.95300	3.54072	1279.56402	0.13155	0.12586
Sonoma	2019	Annual	LHDT2	GAS	5		0	0.14826	0.21635	0.40377	1467.88361	0.00672	0.00618
Sonoma	2019	Annual	LHDT2	DSL	5		0.01	0.77198	0.87885	2.28109	1323.71743	0.08532	0.08163
Sonoma	2019	Annual					100%						
								0.569	0.597	0.257	969.512	0.017	0.015
			IdleVehicle Emission Rate =					2.843	2.986	1.286	4847.559	0.083	0.077
			Number Of Idling Vehicles		15			gram/hr		*based on 5 mph emission rate for 1 hour (5 miles)*			
			Assume vehicles constantly idling per peak demand hour =					42.65	44.79	19.28	72713.39	1.24	1.16
								gram/hr					
			Assume peak demand hour is 10% of daily emission rate =					426.47	447.86	192.84	727133.87	12.42	11.60
								gram/day					
								0.94	0.99	0.42	1601.62	0.03	0.03
								lbs/day					
								0.17	0.18	0.08	265.17	0.005	0.005
								tons/year (metric tons CO_2e)					

Source of idle emissions (from CARB, see *http://www.arb.ca.gov/msei/modeling.htm*)

Idling Emission Rates for EMFAC2011-LDV Vehicle Categories

Step 1 – Extract 5 MPH Running emission rates from Emission Rate Web Database at http://www.arb.ca.gov/jpub/webapp//EMFAC2011WebApp/rateSelectionPage_1.jsp.

Step 2 – Calculate the by model year LDV idling emission rates by multiplying the 5 MPH Running emission rates by 5 (g/mile X mile/hr = g/hr).

EMFAC2014 (v1.0.7) Emission Rates
Region Type: County
Region: Sonoma
Calendar Year: 2021
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW

Region	CalYr	VehClass	MdlYr	Speed	Fuel	VMT	ROG_RUNE	TOG_RUNE	CO_RUNEX	NOx_RUNE	CO2_RUNE	PM10_RUN	PM2_5_RUNEX
Sonoma	2021	HHDT	Aggregatec	5	GAS	8.270978	2.993035	4.36743	63.22987	6.192777	4130.385	0.005184	0.004766
Sonoma	2021	HHDT	Aggregatec	5	DSL	1322.878	0.74954	3.143639	8.663817	18.99307	4360.031	0.037546	0.035922
Sonoma	2021	LDA	Aggregatec	5	GAS	1601.06	0.077076	0.112391	1.200115	0.113108	870.2579	0.011835	0.010882
Sonoma	2021	LDA	Aggregatec	5	DSL	19.96723	0.254053	0.289223	3.570034	0.230702	681.4497	0.069072	0.066084
Sonoma	2021	LDT1	Aggregatec	5	GAS	116.2002	0.164148	0.239201	2.761629	0.276114	1037.66	0.015601	0.014346
Sonoma	2021	LDT1	Aggregatec	5	DSL	0.115056	0.863124	0.982609	3.912654	0.736711	919.5273	0.613109	0.586586
Sonoma	2021	LDT2	Aggregatec	5	GAS	517.9152	0.100196	0.146126	1.525552	0.176888	1161.742	0.011576	0.010644
Sonoma	2021	LDT2	Aggregatec	5	DSL	0.968987	0.266234	0.30309	2.332139	0.175269	838.2113	0.0233	0.022292
Sonoma	2021	LHDT1	Aggregatec	5	GAS	3375.498	0.441425	0.644127	5.200498	0.797591	1395.287	0.011145	0.010248
Sonoma	2021	LHDT1	Aggregatec	5	DSL	3069.453	0.83712	0.953005	3.582018	3.540721	1279.564	0.131546	0.125855
Sonoma	2021	LHDT2	Aggregatec	5	GAS	578.8612	0.148264	0.216347	1.503134	0.403771	1467.884	0.006717	0.006176
Sonoma	2021	LHDT2	Aggregatec	5	DSL	879.9188	0.771979	0.878847	3.335328	2.281093	1323.717	0.08532	0.081629
Sonoma	2021	MCY	Aggregatec	5	GAS	15.57782	13.54362	16.5006	60.99825	1.60034	548.4215	0.011036	0.010355
Sonoma	2021	MDV	Aggregatec	5	GAS	317.6238	0.229508	0.325758	3.046117	0.368992	1582.918	0.012064	0.011099
Sonoma	2021	MDV	Aggregatec	5	DSL	5.895706	0.199651	0.227289	3.595482	0.149823	1039.439	0.019343	0.018506
Sonoma	2021	MH	Aggregatec	5	GAS	67.69932	0.862705	1.258857	14.53738	1.256877	3898.578	0.012935	0.011893
Sonoma	2021	MH	Aggregatec	5	DSL	18.27276	1.208051	1.375286	2.572417	16.05758	2096.56	0.401992	0.384602
Sonoma	2021	MHDT	Aggregatec	5	GAS	128.4769	0.957117	1.396623	8.452169	1.784271	3820.887	0.009008	0.008283
Sonoma	2021	MHDT	Aggregatec	5	DSL	1979.295	0.364292	0.414719	1.410323	9.454215	2220.968	0.024598	0.023534
Sonoma	2021	OBUS	Aggregatec	5	GAS	67.31126	0.406868	0.593701	3.355153	0.847826	3810.012	0.006171	0.005674
Sonoma	2021	OBUS	Aggregatec	5	DSL	152.3534	0.618264	0.703846	2.258286	12.5294	2517.499	0.026608	0.025457
Sonoma	2021	SBUS	Aggregatec	5	GAS	10.83508	0.418594	0.610811	3.035157	0.937531	1789.673	0.007322	0.006732
Sonoma	2021	SBUS	Aggregatec	5	DSL	69.6289	0.725122	0.825497	1.337126	17.07699	2296.83	0.122726	0.117417
Sonoma	2021	UBUS	Aggregatec	5	GAS	111.4608	0.40253	0.587371	2.968917	1.233661	3876.316	0.004064	0.003737
Sonoma	2021	UBUS	Aggregatec	5	DSL	139.6206	3.31408	6.093126	15.75906	25.91633	3663.964	0.617027	0.590335

EMFAC2014 (v1.0.7) Emission Rates
Region Type: County
Region: Sonoma
Calendar Year: 2030
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW

Area	CalYr	Season	Veh	Fuel	Speed	VMT	Assumed fraction of Vehicles	ROG_RUNEX	TOG_RUNEX	NOX_RUNEX	CO2_RUNEX(Pavley I+LCFS)	PM10_RUNEX	PM2_5_RUNEX
Sonoma	2030	Annual	LDA	GAS	5		0.58	0.0396	0.0577	0.0613	680.3469	0.0095	0.0088
Sonoma	2030	Annual	LDA	DSL	5		0.01	0.1197	0.1363	0.0767	527.8542	0.0067	0.0064
Sonoma	2030	Annual	LDT1	GAS	5		0.05	0.0593	0.0865	0.1002	756.2958	0.0099	0.0091
Sonoma	2030	Annual	LDT1	DSL	5		0	0.2884	0.3283	0.1794	571.5425	0.0326	0.0312
Sonoma	2030	Annual	LDT2	GAS	5		0.18	0.0481	0.0702	0.0783	849.3604	0.0090	0.0082
Sonoma	2030	Annual	LDT2	DSL	5		0	0.2592	0.2951	0.1523	641.3669	0.0090	0.0087
Sonoma	2030	Annual	MDV	GAS	5		0.12	0.0911	0.3994	0.1579	1178.6979	0.0094	0.0086
Sonoma	2030	Annual	MDV	DSL	5		0	0.1210	0.2438	0.0729	804.1671	0.0046	0.0044
Sonoma	2030	Annual	MCY	GAS	5		0.01	12.9884	16.6018	1.7050	562.3872	0.0128	0.0120
Sonoma	2030	Annual	LHDT1	GAS	5		0.02	0.20110	0.29345	0.51392	1355.15149	0.00934	0.00859
Sonoma	2030	Annual	LHDT1	DSL	5		0.02	0.81489	0.92770	2.08829	1215.26239	0.08012	0.07666
Sonoma	2030	Annual	LHDT2	GAS	5		0	0.04694	0.06849	0.14808	1402.14844	0.00704	0.00647
Sonoma	2030	Annual	LHDT2	DSL	5		0.01	0.75638	0.86109	0.80339	1232.33391	0.03578	0.03424
Sonoma	2030	Annual					100%						
								0.204	0.299	0.151	801.379	0.011	0.010
			IdleVehicle Emission Rate =					1.022	1.494	0.757	4006.893	0.056	0.051
			Number Of Idling Vehicles		15			gram/hr		*based on 5 mph emission rate for 1 hour (5 miles)*			
			Assume vehicles constantly idling per peak demand hour =					15.34	22.41	11.36	60103.40	0.83	0.77
								gram/hr					
			Assume peak demand hour is 10% of daily emission rate =					153.35	224.10	113.62	601034.00	8.33	7.72
								gram/day					
								0.34	0.49	0.25	1323.86	0.02	0.02
								lbs/day					
								0.06	0.09	0.05	219.18	0.003	0.003
								tons/year (metric tons CO_2e)					

Source of idle emissions (from CARB, see *http://www.arb.ca.gov/msei/modeling.htm*)

Idling Emission Rates for EMFAC2011-LDV Vehicle Categories

Step 1 – Extract 5 MPH Running emission rates from Emission Rate Web Database at http://www.arb.ca.gov/jpub/webapp//EMFAC2011WebApp/rateSelectionPage_1.jsp.

Step 2 – Calculate the by model year LDV idling emission rates by multiplying the 5 MPH Running emission rates by 5 (g/mile X mile/hr = g/hr).

EMFAC2014 (v1.0.7) Emission Rates
Region Type: County
Region: Sonoma
Calendar Year: 2030
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW

Region	CalYr	VehClass	MdlYr	Speed	Fuel	VMT	ROG_RUNE	TOG_RUNE	CO_RUNEX	NOx_RUNE	CO2_RUNE	PM10_RUN	PM2_5_RUNEX
Sonoma	2030	HHDT	Aggregatec	5	GAS	8.830096	2.207508	3.221191	55.96782	5.861098	3847.794	0.007187	0.006608
Sonoma	2030	HHDT	Aggregatec	5	DSL	1470.154	0.476056	3.095606	10.81794	15.76361	3672.002	0.012138	0.011613
Sonoma	2030	LDA	Aggregatec	5	GAS	1673.867	0.039571	0.057742	0.74975	0.06129	680.3469	0.009541	0.008773
Sonoma	2030	LDA	Aggregatec	5	DSL	22.45147	0.119689	0.136257	2.994559	0.076662	527.8542	0.006653	0.006365
Sonoma	2030	LDT1	Aggregatec	5	GAS	101.3628	0.059306	0.086539	1.056239	0.100203	756.2958	0.009865	0.00907
Sonoma	2030	LDT1	Aggregatec	5	DSL	0.054655	0.288406	0.328331	2.643797	0.179433	571.5425	0.032635	0.031223
Sonoma	2030	LDT2	Aggregatec	5	GAS	529.0311	0.048121	0.070218	0.888881	0.078289	849.3604	0.008951	0.00823
Sonoma	2030	LDT2	Aggregatec	5	DSL	1.145301	0.259175	0.295053	2.512499	0.152305	641.3669	0.009043	0.008652
Sonoma	2030	LHDT1	Aggregatec	5	GAS	1660.563	0.201105	0.293452	1.994416	0.513915	1355.151	0.009338	0.008586
Sonoma	2030	LHDT1	Aggregatec	5	DSL	1829.91	0.814894	0.927703	3.690484	2.088289	1215.262	0.080125	0.076659
Sonoma	2030	LHDT2	Aggregatec	5	GAS	407.2437	0.046939	0.068493	0.463095	0.148082	1402.148	0.007039	0.006472
Sonoma	2030	LHDT2	Aggregatec	5	DSL	662.7659	0.756377	0.861085	3.406538	0.80339	1232.334	0.035784	0.034236
Sonoma	2030	MCY	Aggregatec	5	GAS	13.48897	12.98837	16.20253	49.92982	1.705043	562.3872	0.01283	0.011973
Sonoma	2030	MDV	Aggregatec	5	GAS	278.9094	0.091068	0.132886	1.338261	0.157938	1178.698	0.009393	0.008636
Sonoma	2030	MDV	Aggregatec	5	DSL	7.223674	0.120979	0.137727	3.125188	0.07294	804.1671	0.004594	0.004395
Sonoma	2030	MH	Aggregatec	5	GAS	42.75734	0.227204	0.331535	1.630237	0.619765	3771.86	0.008641	0.007945
Sonoma	2030	MH	Aggregatec	5	DSL	11.72362	0.975186	1.110185	2.366454	12.96821	2045.246	0.19342	0.185053
Sonoma	2030	MHDT	Aggregatec	5	GAS	132.8249	0.188371	0.274871	1.336454	0.436723	3695.673	0.0076	0.006988
Sonoma	2030	MHDT	Aggregatec	5	DSL	2325.999	0.250528	0.285207	1.301917	10.20024	2137.81	0.00667	0.006381
Sonoma	2030	OBUS	Aggregatec	5	GAS	66.39431	0.120854	0.176351	0.887426	0.285221	3691.101	0.007419	0.006821
Sonoma	2030	OBUS	Aggregatec	5	DSL	176.1318	0.338501	0.385358	1.873452	13.21188	2392.891	0.007642	0.007311
Sonoma	2030	SBUS	Aggregatec	5	GAS	17.57835	0.097043	0.141605	0.610781	0.248591	1752.747	0.006979	0.006417
Sonoma	2030	SBUS	Aggregatec	5	DSL	70.28649	0.396495	0.45138	1.303118	10.64928	2183.876	0.029663	0.02838
Sonoma	2030	UBUS	Aggregatec	5	GAS	95.86316	0.262521	0.38307	1.97501	0.96526	3759.991	0.006053	0.005566
Sonoma	2030	UBUS	Aggregatec	5	DSL	103.834	1.64421	3.989914	16.67545	14.39675	3481.603	0.306171	0.292926

EMFAC2014 (v1.0.7) Emission Rates
Region Type: County
Region: Sonoma
Calendar Year: 2035
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW

Area	CalYr	Season	Veh	Fuel	Speed	VMT	Assumed fraction of Vehicles	ROG_RUNEX	TOG_RUNEX	NOX_RUNEX	CO2_RUNEX(Pavley I+LCFS)	PM10_RUNEX	PM2_5_RUNEX
Sonoma	2030	Annual	LDA	GAS	5		0.58	0.0297	0.0434	0.0486	631.6995	0.0070	0.0064
Sonoma	2030	Annual	LDA	DSL	5		0.01	0.0932	0.1061	0.0544	491.2411	0.0030	0.0028
Sonoma	2030	Annual	LDT1	GAS	5		0.05	0.0363	0.0530	0.0588	685.6911	0.0069	0.0063
Sonoma	2030	Annual	LDT1	DSL	5		0	0.2610	0.2971	0.1559	518.5786	0.0098	0.0093
Sonoma	2030	Annual	LDT2	GAS	5		0.18	0.0359	0.0524	0.0585	781.9391	0.0065	0.0060
Sonoma	2030	Annual	LDT2	DSL	5		0	0.2597	0.2957	0.1516	595.8004	0.0089	0.0085
Sonoma	2030	Annual	MDV	GAS	5		0.12	0.0632	0.0922	0.1078	1066.8622	0.0071	0.0066
Sonoma	2030	Annual	MDV	DSL	5		0	0.1016	0.1156	0.0576	747.1232	0.0031	0.0030
Sonoma	2030	Annual	MCY	GAS	5		0.01	12.8885	16.1383	1.7275	565.3091	0.0134	0.0125
Sonoma	2030	Annual	LHDT1	GAS	5		0.02	1293.45741	0.08984	0.32433	1328.71735	0.00782	0.00719
Sonoma	2030	Annual	LHDT1	DSL	5		0.02	1547.30599	0.79276	1.37026	1179.51923	0.05158	0.04935
Sonoma	2030	Annual	LHDT2	GAS	5		0	387.82738	0.02724	0.09045	1380.56121	0.00745	0.00685
Sonoma	2030	Annual	LHDT2	DSL	5		0.01	635.51832	0.74986	0.44354	1202.53891	0.02266	0.02168
Sonoma	2030	Annual					100%						
								63.333	0.236	0.111	742.198	0.008	0.007
			IdleVehicle Emission Rate =					316.667	1.179	0.554	3710.992	0.040	0.037
			Number Of Idling Vehicles		15			gram/hr		*based on 5 mph emission rate for 1 hour (5 miles)*			
			Assume vehicles constantly idling per peak demand hour =					4750.00	17.69	8.30	55664.88	0.60	0.56
								gram/hr					
			Assume peak demand hour is 10% of daily emission rate =					47500.03	176.92	83.05	556648.76	6.00	5.56
								gram/day					
								104.63	0.39	0.18	1226.10	0.01	0.01
								lbs/day					
								19.09	0.07	0.03	203.00	0.002	0.002
								tons/year (metric tons CO_2e)					

Source of idle emissions (from CARB, see *http://www.arb.ca.gov/msei/modeling.htm*)

Idling Emission Rates for EMFAC2011-LDV Vehicle Categories

Step 1 – Extract 5 MPH Running emission rates from Emission Rate Web Database at http://www.arb.ca.gov/jpub/webapp//EMFAC2011WebApp/rateSelectionPage_1.jsp.

Step 2 – Calculate the by model year LDV idling emission rates by multiplying the 5 MPH Running emission rates by 5 (g/mile X mile/hr = g/hr).

EMFAC2014 (v1.0.7) Emission Rates
Region Type: County
Region: Sonoma
Calendar Year: 2035
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW

Region	CalYr	VehClass	MdlYr	Speed	Fuel	VMT	ROG_RUNE	TOG_RUNE	CO_RUNEX	NOx_RUNE	CO2_RUNE	PM10_RUN	PM2_5_RUNEX
Sonoma	2035	HHDT	Aggregatec	5	GAS	9.239346	2.234189	3.260124	57.03988	6.074189	3803.408	0.00762	0.007006
Sonoma	2035	HHDT	Aggregatec	5	DSL	1540.423	0.46047	3.150891	11.47014	15.18134	3496.759	0.010405	0.009954
Sonoma	2035	LDA	Aggregatec	5	GAS	1699.977	0.029723	0.043371	0.615387	0.048585	631.6995	0.006994	0.006431
Sonoma	2035	LDA	Aggregatec	5	DSL	23.29647	0.093207	0.10611	2.758216	0.054365	491.2411	0.002977	0.002848
Sonoma	2035	LDT1	Aggregatec	5	GAS	101.7495	0.036347	0.053038	0.686021	0.058759	685.6911	0.006892	0.006337
Sonoma	2035	LDT1	Aggregatec	5	DSL	0.055423	0.260958	0.297083	2.569373	0.155867	518.5786	0.009765	0.009342
Sonoma	2035	LDT2	Aggregatec	5	GAS	543.8317	0.035922	0.052417	0.737281	0.058517	781.9391	0.006504	0.00598
Sonoma	2035	LDT2	Aggregatec	5	DSL	1.18968	0.259735	0.295691	2.535664	0.15163	595.8004	0.008918	0.008532
Sonoma	2035	LHDT1	Aggregatec	5	GAS	1293.457	0.089843	0.131098	0.697457	0.324328	1328.717	0.007815	0.007186
Sonoma	2035	LHDT1	Aggregatec	5	DSL	1547.306	0.792757	0.902501	3.653293	1.370258	1179.519	0.051581	0.049349
Sonoma	2035	LHDT2	Aggregatec	5	GAS	387.8274	0.027241	0.03975	0.245799	0.090453	1380.561	0.007446	0.006846
Sonoma	2035	LHDT2	Aggregatec	5	DSL	635.5183	0.749863	0.853669	3.376307	0.443538	1202.539	0.022663	0.021683
Sonoma	2035	MCY	Aggregatec	5	GAS	13.38348	12.88845	16.13827	47.58628	1.727536	565.3091	0.013397	0.012493
Sonoma	2035	MDV	Aggregatec	5	GAS	279.3923	0.06318	0.092192	1.035668	0.107794	1066.862	0.007125	0.006552
Sonoma	2035	MDV	Aggregatec	5	DSL	7.624584	0.101554	0.115612	2.957217	0.057572	747.1232	0.003117	0.002982
Sonoma	2035	MH	Aggregatec	5	GAS	38.65706	0.129358	0.188758	0.847595	0.370251	3714.825	0.007695	0.007075
Sonoma	2035	MH	Aggregatec	5	DSL	10.35009	0.878263	0.999844	2.264309	11.87965	2019.894	0.122363	0.11707
Sonoma	2035	MHDT	Aggregatec	5	GAS	138.6246	0.10269	0.149846	0.656341	0.258943	3668.974	0.007653	0.007036
Sonoma	2035	MHDT	Aggregatec	5	DSL	2474.7	0.245615	0.279614	1.285925	10.25145	2121.496	0.006207	0.005938
Sonoma	2035	OBUS	Aggregatec	5	GAS	67.90254	0.085117	0.124202	0.518566	0.219345	3668.928	0.007657	0.00704
Sonoma	2035	OBUS	Aggregatec	5	DSL	187.0878	0.318994	0.363151	1.763746	12.55574	2364.369	0.007118	0.00681
Sonoma	2035	SBUS	Aggregatec	5	GAS	20.91277	0.058661	0.085597	0.324099	0.165798	1741.788	0.007341	0.006749
Sonoma	2035	SBUS	Aggregatec	5	DSL	70.52291	0.277537	0.315955	1.244896	9.376205	2140.601	0.009651	0.009234
Sonoma	2035	UBUS	Aggregatec	5	GAS	92.79382	0.21782	0.317842	1.650043	0.871091	3717.061	0.006841	0.00629
Sonoma	2035	UBUS	Aggregatec	5	DSL	96.79001	1.096576	3.322816	16.95336	10.41209	3400.448	0.204606	0.195755

Attachment 4: Construction Health Risk Calculations

325 Yolanda Avenue, Santa Rosa, CA

DPM Emissions and Modeling Emission Rates - Unmitigated

Emissions Model Year	Activity	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2019	Construction	0.1205	DPM	241.0	0.07336	9.24E-03	41,394	**2.23E-07**
2020	Construction	0.0385	DPM	77.0	0.02344	2.95E-03	41,394	**7.13E-08**
Total		***0.1590***		***318.0***	***0.0968***	***0.0122***		

Operation Hours

hr/day = 9 (7am - 4pm)

days/yr = 365

hours/year = 3285

PM2.5 Fugitive Dust Emissions for Modeling - Unmitigated

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2019	Construction	FUG	0.0787	157.4	0.04791	6.04E-03	41,394	**1.46E-07**
2020	Construction	FUG	0.0035	7.0	0.00214	2.70E-04	41,394	**6.52E-09**
Total			***0.0822***	***164.4***	***0.0501***	***0.0063***		

Operation Hours

hr/day = 9 (7am - 4pm)

days/yr = 365

hours/year = 3285

DPM Construction Emissions and Modeling Emission Rates - With Mitigation

Emissions Model Year	Activity	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2019	Construction	0.0135	DPM	27.0	0.00822	1.04E-03	41,394	**2.50E-08**
2020	Construction	0.0054	DPM	10.8	0.00330	4.16E-04	41,394	**1.00E-08**
Total		***0.0189***		***37.8***	***0.0115***	***0.0015***		

Operation Hours

hr/day = 9 (7am - 4pm)

days/yr = 365

hours/year = 3285

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

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2019	Construction	FUG	0.0231	46.2	0.01406	1.77E-03	41,394	**4.28E-08**
2020	Construction	FUG	0.0035	7.0	0.00214	2.70E-04	41,394	**6.52E-09**
Total			***0.0266***	***53.2***	***0.0162***	***0.0020***		

Operation Hours

hr/day = 9 (7am - 4pm)

days/yr = 365

hours/year = 3285

325 Yolanda Avenue, Santa Rosa, CA
Construction Health Impacts Summary

Maximum Impacts at Construction MEI Location - Unmitigated

Emissions Year	Maximum Concentrations: Exhaust PM10/DPM ($\mu g/m^3$)	Maximum Concentrations: Fugitive PM2.5 ($\mu g/m^3$)	Cancer Risk (per million): Child	Cancer Risk (per million): Adult	Hazard Index (-)	Maximum Annual PM2.5 Concentration ($\mu g/m^3$)
2019	0.1971	0.2091	32.37	0.57	0.039	0.41
2020	0.0630	0.0093	10.35	0.18	0.013	0.07
Total	-	-	**42.7**	**0.7**	-	-
Maximum	0.1971	0.2091	-	-	**0.04**	**0.41**

Maximum Impacts at Construction MEI Location - With Mitigation

Emissions Year	Maximum Concentrations: Exhaust PM10/DPM ($\mu g/m^3$)	Maximum Concentrations: Fugitive PM2.5 ($\mu g/m^3$)	Cancer Risk (per million): Child	Cancer Risk (per million): Adult	Hazard Index (-)	Maximum Annual PM2.5 Concentration ($\mu g/m^3$)
2019	0.0221	0.0613	3.63	0.06	0.004	0.08
2020	0.0088	0.0093	1.45	0.03	0.002	0.02
Total	-	-	**5.1**	**0.1**	-	-
Maximum	0.0221	0.0613	-	-	**0.004**	**0.08**

325 Yolanda Avenue, Santa Rosa, CA - Unmitigated 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				Adult - Exposure Information					
							Modeled					
Exposure Year	**Exposure Duration (years)**	**Age**	**DPM Conc (ug/m3) Year**	**DPM Conc (ug/m3) Annual**	**Age Sensitivity Factor**	**Infant/Child Cancer Risk (per million)**	**DPM Conc (ug/m3) Year**	**DPM Conc (ug/m3) Annual**	**Age Sensitivity Factor**	**Adult Cancer Risk (per million)**	**Fugitive PM2.5**	**Total PM2.5**
0	0.25	-0.25 - 0*		-	-				-	-		
1	1	0 - 1	2019	0.1971	10	32.37	2019	0.1971	1	0.57	0.2091	0.4056
2	1	1 - 2	2020	0.0630	10	10.35	2020	0.0630	1	0.18	0.0093	0.0723
3	1	2 - 3			3	0.00			1	0.00		
4	1	3 - 4			3	0.00			1	0.00		
5	1	4 - 5			3	0.00			1	0.00		
6	1	5 - 6			3	0.00			1	0.00		
7	1	6 - 7			3	0.00			1	0.00		
8	1	7 - 8			3	0.00			1	0.00		
9	1	8 - 9			3	0.00			1	0.00		
10	1	9 - 10			3	0.00			1	0.00		
11	1	10 - 11			3	0.00			1	0.00		
12	1	11 - 12			3	0.00			1	0.00		
13	1	12 - 13			3	0.00			1	0.00		
14	1	13 - 14			3	0.00			1	0.00		
15	1	14 - 15			3	0.00			1	0.00		
16	1	15 - 16			3	0.00			1	0.00		
17	1	16-17			1	0.00			1	0.00		
18	1	17-18			1	0.00			1	0.00		
19	1	18-19			1	0.00			1	0.00		
20	1	19-20			1	0.00			1	0.00		
21	1	20-21			1	0.00			1	0.00		
22	1	21-22			1	0.00			1	0.00		
23	1	22-23			1	0.00			1	0.00		
24	1	23-24			1	0.00			1	0.00		
25	1	24-25			1	0.00			1	0.00		
26	1	25-26			1	0.00			1	0.00		
27	1	26-27			1	0.00			1	0.00		
28	1	27-28			1	0.00			1	0.00		
29	1	28-29			1	0.00			1	0.00		
30	1	29-30			1	0.00			1	0.00		
Total Increased Cancer Risk						**42.7**				**0.75**		

* Third trimester of pregnancy

325 Yolanda Avenue, Santa Rosa, CA - Mitigated Emissions
Maximum DPM Cancer Risk Calculations From Construction
Impacts at Off-Site Receptors-1.5 meter

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				Adult - Exposure Information					
							Modeled					
Exposure Year	**Exposure Duration (years)**	**Age**	**DPM Conc (ug/m3) Year**	**DPM Conc (ug/m3) Annual**	**Age Sensitivity Factor**	**Infant/Child Cancer Risk (per million)**	**DPM Conc (ug/m3) Year**	**DPM Conc (ug/m3) Annual**	**Age Sensitivity Factor**	**Adult Cancer Risk (per million)**	**Fugitive PM2.5**	**Total PM2.5**
0	0.25	-0.25 - 0*		-	-				-	-		
1	1	0 - 1	2019	0.0221	10	3.63	2019	0.0221	1	0.06	0.0613	0.0833
2	1	1 - 2	2020	0.0088	10	1.45	2020	0.0088	1	0.03	0.0093	0.018
3	1	2 - 3			3	0.00			1	0.00		
4	1	3 - 4			3	0.00			1	0.00		
5	1	4 - 5			3	0.00			1	0.00		
6	1	5 - 6			3	0.00			1	0.00		
7	1	6 - 7			3	0.00			1	0.00		
8	1	7 - 8			3	0.00			1	0.00		
9	1	8 - 9			3	0.00			1	0.00		
10	1	9 - 10			3	0.00			1	0.00		
11	1	10 - 11			3	0.00			1	0.00		
12	1	11 - 12			3	0.00			1	0.00		
13	1	12 - 13			3	0.00			1	0.00		
14	1	13 - 14			3	0.00			1	0.00		
15	1	14 - 15			3	0.00			1	0.00		
16	1	15 - 16			3	0.00			1	0.00		
17	1	16-17			1	0.00			1	0.00		
18	1	17-18			1	0.00			1	0.00		
19	1	18-19			1	0.00			1	0.00		
20	1	19-20			1	0.00			1	0.00		
21	1	20-21			1	0.00			1	0.00		
22	1	21-22			1	0.00			1	0.00		
23	1	22-23			1	0.00			1	0.00		
24	1	23-24			1	0.00			1	0.00		
25	1	24-25			1	0.00			1	0.00		
26	1	25-26			1	0.00			1	0.00		
27	1	26-27			1	0.00			1	0.00		
28	1	27-28			1	0.00			1	0.00		
29	1	28-29			1	0.00			1	0.00		
30	1	29-30			1	0.00			1	0.00		
Total Increased Cancer Risk						**5.1**				**0.09**		

* Third trimester of pregnancy

325 Yolanda Avenue, Santa Rosa, CA - Unmitigated Emissions
Maximum DPM Cancer Risk Calculations From Construction
Impacts at Off-Site Receptors-4.5 meter

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		
					Age	Cancer	Modeled		Age	Cancer		
Exposure	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*		-	-				-	-		
1	1	0 - 1	2019	0.0273	10	4.48	2019	0.0273	1	0.08	0.0199	0.0472
2	1	1 - 2	2020	0.0087	10	1.43	2020	0.0087	1	0.03	0.0009	0.010
3	1	2 - 3			3	0.00			1	0.00		
4	1	3 - 4			3	0.00			1	0.00		
5	1	4 - 5			3	0.00			1	0.00		
6	1	5 - 6			3	0.00			1	0.00		
7	1	6 - 7			3	0.00			1	0.00		
8	1	7 - 8			3	0.00			1	0.00		
9	1	8 - 9			3	0.00			1	0.00		
10	1	9 - 10			3	0.00			1	0.00		
11	1	10 - 11			3	0.00			1	0.00		
12	1	11 - 12			3	0.00			1	0.00		
13	1	12 - 13			3	0.00			1	0.00		
14	1	13 - 14			3	0.00			1	0.00		
15	1	14 - 15			3	0.00			1	0.00		
16	1	15 - 16			3	0.00			1	0.00		
17	1	16-17			1	0.00			1	0.00		
18	1	17-18			1	0.00			1	0.00		
19	1	18-19			1	0.00			1	0.00		
20	1	19-20			1	0.00			1	0.00		
21	1	20-21			1	0.00			1	0.00		
22	1	21-22			1	0.00			1	0.00		
23	1	22-23			1	0.00			1	0.00		
24	1	23-24			1	0.00			1	0.00		
25	1	24-25			1	0.00			1	0.00		
26	1	25-26			1	0.00			1	0.00		
27	1	26-27			1	0.00			1	0.00		
28	1	27-28			1	0.00			1	0.00		
29	1	28-29			1	0.00			1	0.00		
30	1	29-30			1	0.00			1	0.00		
Total Increased Cancer Risk						**5.9**				**0.10**		

* Third trimester of pregnancy