COPPERLEAF SUBDIVISION PROJECT – AIR QUALITY AND GREENHOUSE GAS EMISSIONS ASSESSMENT SAN JUAN BAUTISTA, CALIFORNIA

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Project 15-055

Introduction

This report addresses air quality and greenhouse gas (GHG) emissions associated with the proposed Copperleaf subdivision project in San Juan Bautista, California. The project proposes the development of a 45-unit subdivision situated on the north side of San Juan-Hollister Road, 300 feet east of the intersection with the Alameda/Old San Juan Hollister Road and south of Highway 156. The methodologies for evaluating air quality and GHG emission impacts from this project are contained in the Monterey Bay Unified Air Pollution Control District (MBUAPCD) CEQA Air Quality Guidelines that were published in 2008.[1] This report addresses air quality and greenhouse gas emissions environmental checklist questions for compliance with CEQA, assuming the ultimate development of the project site as described above.

Setting

The project is located in the northern portion of San Benito County, which is in the North Central Coast Air Basin (Air Basin). Ambient air quality standards have been established at both the State and federal level. The Air Basin meets all ambient air quality standards with the exception of ground-level ozone and respirable particulate matter (PM_{10}). 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 MBUAPCD's attempt to reduce ozone levels. High ozone levels aggravate respiratory and cardiovascular diseases, reduce lung function, and increase coughing and chest discomfort. Particulate matter is another problematic air pollutant of the Air Basin. Elevated concentrations of PM_{10} 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.

The MBUAPCD is the regional agency tasked with managing air quality in the region. CARB (the California Air Resources Board, a part of the California Environmental Protection Agency) oversees regional air district activities and regulates air quality at the State level. The 2008 MBUAPCD CEQA Air Quality Guidelines are used in this assessment to evaluate air quality impacts of the project.

Air Pollutants

<u>Ozone</u>

Ozone (O_3) is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving ROG and NO_X. The main sources of ROG and NO_X, often referred to as ozone precursors, are combustion processes (including combustion in motor vehicle engines) and the evaporation of solvents, paints, and fuels. Automobiles are the single largest source of ozone precursors. Ozone is referred to as a regional air pollutant because its precursors are transported and diffused by wind concurrently with ozone production through the photochemical reaction process. Ozone causes eye irritation, airway constriction, shortness of breath, and can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema.

[1] Monterey Bay Unified Air Pollution Control District, 2008. *CEQA Air Quality Guidelines*.

Carbon Monoxide

Carbon monoxide (CO) is an odorless, colorless gas usually formed as the result of the incomplete combustion of fuels. The single largest source of CO is motor vehicles. While CO transport is limited, it disperses with distance from the source under normal meteorological conditions. However, under certain extreme meteorological conditions, CO concentrations near congested roadways or intersections may reach unhealthful levels that adversely affect local sensitive receptors (e.g., residents, schoolchildren, the elderly, hospital patients, etc.). Typically, high CO concentrations are associated with roadways or intersections operating at unacceptable levels of service (LOS) or with extremely high traffic volumes. Exposure to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause headaches, nausea, dizziness, fatigue, impair central nervous system function, and induce angina (chest pain) in persons with serious heart disease. Very high levels of CO can be fatal.

Nitrogen Dioxide

NO_2 is a reddish brown gas that is a byproduct of combustion processes. Automobiles and industrial operations are the main sources of NO_2. Aside from its contribution to ozone formation, NO_2 also contribute to other pollution problems, including a high concentration of fine particulate matter, poor visibility, and acid deposition. NO_2 may be visible as a coloring component on high pollution days, especially in conjunction with high ozone levels. NO_2 decreases lung function and may reduce resistance to infection. In 2010 U.S. EPA strengthened the health-based NAAQS for NO_2.

Sulfur Dioxide

Sulfur dioxide (SO_2) is a colorless, irritating gas formed primarily from incomplete combustion of fuels containing sulfur. Industrial facilities also contribute to gaseous SO_2 levels in the region. SO_2 irritates the respiratory tract, can injure lung tissue when combined with fine particulate matter, and reduces visibility and the level of sunlight.

Particulate Matter

Particulate matter is the term used for a mixture of solid particles and liquid droplets found in the air. Coarse particles are those that are larger than 2.5 microns but smaller than 10 microns (PM_{10}). $PM_{2.5}$ refers to fine suspended particulate matter with an aerodynamic diameter of 2.5 microns or less that is not readily filtered out by the lungs. Nitrates, sulfates, dust, and combustion particulates are major components of PM_{10} and $PM_{2.5}$. These small particles can be directly emitted into the atmosphere as by-products of fuel combustion, through abrasion, such as tire or brake lining wear, or through fugitive dust (wind or mechanical erosion of soil). They can also be formed in the atmosphere through chemical reactions. Particulates may transport carcinogens and other toxic compounds that adhere to the particle surfaces, and can enter the human body through the lungs.

National and State Ambient Air Quality Standards

The ambient air quality in a given area depends on the quantities of pollutants emitted within the area, transport of pollutants to and from surrounding areas, local and regional meteorological conditions, as well as the surrounding topography of the air basin. Air quality is described by the concentration of various pollutants in the atmosphere. Units of concentration are generally expressed in parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$).

As required by the Federal Clean Air Act, National Ambient Air Quality Standards (NAAQS) have been established for six major air pollutants: CO, NO_2, O_3, particulate matter, including PM_{10} and $PM_{2.5}$, sulfur oxides, and lead. Pursuant to the California Clean Air Act, the State of California has established the California Ambient Air Quality Standards (CAAQS). Both State and Federal standards are summarized in Table 1. The "primary" standards have been established to protect the public health. The "secondary" standards are intended to protect the nation's welfare and account for air pollutant effects on soil, water, visibility, materials, vegetation and other aspects of the general welfare. CAAQS are generally the same or more stringent than NAAQS.

Attainment Status

Areas with air quality that exceed adopted air quality standards are designated as "nonattainment" areas for the relevant air pollutants. Nonattainment areas are sometimes further classified by degree (marginal, moderate, serious, severe, and extreme for ozone, and moderate and serious for carbon monoxide and PM_{10}) or status ("nonattainment-transitional"). Areas that comply with air quality standards are designated as "attainment" areas for the relevant air pollutants. "Unclassified" areas are those with insufficient air quality monitoring data to support a designation of attainment or nonattainment, but are generally presumed to comply with the ambient air quality standard. State Implementation Plans must be prepared by States for areas designated as federal nonattainment areas to demonstrate how the area will come into attainment of the exceeded federal ambient air quality standard.

The Air Basin as a whole is considered by U.S. EPA as attainment or unclassified for all regulated criteria pollutants. At the State level, the region is designated as nonattainment for ozone and PM_{10}. The region is attainment or unclassified for all other pollutants regulated under the CAAQS.

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 San Francisco 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.

Table 1. Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	National Standards [a]	
			Primary [b,c]	Secondary [b,d]
Ozone (O_3)	8-hour	0.070 ppm (137 µg/m^3)	0.075 ppm (147 µg/m^3)	Same as primary
	1-hour	0.09 ppm (180 µg/m^3)	—[e]	Same as primary
Carbon Monoxide (CO)	8-hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	—
	1-hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	—
Nitrogen Dioxide (NO_2)	Annual	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as primary
	1-hour	0.18 ppm (339 µg/m^3)	0.100 ppm[f] (188 µg/m^3)	—
Sulfur Dioxide (SO_2)	Annual	—	—[g]	—
	24-hour	0.04 ppm (105 µg/m^3)	—[g]	—
	3-hour	—	—	0.5 ppm (1300 µg/m^3)
	1-hour	0.25 ppm (655 µg/m^3)	0.075 ppm[g] (196 µg/m^3)	—
PM_{10}	Annual	20 µg/m^3	—	Same as primary
	24-hour	50 µg/m^3	150 µg/m^3	Same as primary
$PM_{2.5}$	Annual	12 µg/m^3	12 µg/m^3[h]	
	24-hour	No Separate State Standard	35 µg/m^3	
Lead	Calendar quarter	—	1.5 µg/m^3	Same as primary
	30-day average	1.5 µg/m^3	—	—

Notes: ppm = parts per million
µg/m^3 = micrograms per cubic meter
mg/m^3 = milligrams per cubic meter

(a) California standards for ozone, carbon monoxide, sulfur dioxide, nitrogen dioxide, and particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles), are not to be exceeded. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.

(b) Concentrations are expressed first in units in which they were promulgated. Equivalent units given in parenthesis.

(c) Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than 3 years after that state's implementation Plan is approved by the EPA.

(d) Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

(e) The national 1-hour ozone standard was revoked by U.S. EPA on June 15, 2005. A new 8-hour standard was established in May 2008.

(f) The form of the 1-hour NO_2 standard is the 3-year average of the 98th percentile of the daily maximum 1-hour average concentration.

(g) On June 2, 2010 the U.S. EPA established a new 1-hour SO_2 standard, effective August 23, 2010, which is based on the 3-year average of the annual 99th percentile of the 1-hour daily maximum. The EPA also revoked both the existing 24-hour and annual average SO_2 standards.

(h) On December 14, 2012 the U.S. EPA strengthened the annual NAAQS for $PM_{2.5}$ to 12.0 µg/m^3

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.[2] 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.

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 closest sensitive receptors to the project site are single-family residences across Old San Juan Hollister Road to the south and residences to the east in the Mission RV Park. The project would introduce new sensitive receptors in the form of new residences.

Greenhouse Gases

Global temperatures are affected by naturally occurring and anthropogenic-generated (generated by humankind) atmospheric gases, such as water vapor, carbon dioxide, methane, and nitrous oxide. Gases that trap heat in the atmosphere are called greenhouse gases (GHG). Solar radiation enters the earth's atmosphere from space, and a portion of the radiation is absorbed at the surface. The earth emits this radiation back toward space as infrared radiation. Greenhouse gases, which are mostly transparent to incoming solar radiation, are effective in absorbing infrared radiation and redirecting some of this back to the earth's surface. As a result, this radiation that otherwise would have escaped back into space is now retained, resulting in a warming of the atmosphere. This is known as the greenhouse effect. The greenhouse effect helps maintain a habitable climate. Emissions of GHGs from human activities, such as electricity production, motor vehicle use and agriculture, are elevating the concentration of GHGs in the atmosphere, and are reported to have led to a trend of unnatural warming of the earth's natural climate, known as global warming or global climate change. The term "global climate change" is often used interchangeably with the term "global warming," but "global climate change" is preferred because it implies that there are other consequences to the global climate in addition to rising temperatures. Other than water vapor, the primary GHGs contributing to global climate change include the following gases:

- Carbon dioxide (CO_2), primarily a byproduct of fuel combustion;
- Nitrous oxide (N_2O), a byproduct of fuel combustion; also associated with agricultural operations such as the fertilization of crops;
- Methane (CH_4), commonly created by off-gassing from agricultural practices (e.g. livestock), wastewater treatment and landfill operations;
- Chlorofluorocarbons (CFCs) were used as refrigerants, propellants and cleaning solvents, but their production has been mostly prohibited by international treaty;
- Hydrofluorocarbons (HFCs) are now widely used as a substitute for chlorofluorocarbons in refrigeration and cooling; and

[2] Available online: http://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm. Accessed: July 1, 2015.

- Perfluorocarbons (PFCs) and sulfur hexafluoride (SF_6) emissions are commonly created by industries such as aluminum production and semiconductor manufacturing.

These gases vary considerably in terms of Global Warming Potential (GWP), a term developed to compare the propensity of each GHG to trap heat in the atmosphere relative to another GHG. GWP is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and the length of time of gas remains in the atmosphere. The GWP of each GHG is measured relative to CO_2. Accordingly, GHG emissions are typically measured and reported in terms of CO_2 equivalent (CO_2e). For instance, SF_6 is 22,800 times more intense in terms of global climate change contribution than CO_2.

Project Impacts

Thresholds of Significance

The CEQA Guidelines prepared by the Natural Resources Agency were the basis of identifying potentially significant air quality and GHG impacts with implementation of the proposed project. The MBUAPCD provides guidance in assessing impacts to lead agencies in the Bay Area. In 2008, MBUAPCD adopted new CEQA Air Quality Guidelines that included thresholds of significance to assist in the review of projects under CEQA. These thresholds were designed to establish the level at which MBUAPCD believed air pollution emissions would cause significant environmental impacts under CEQA and were in the Air District's CEQA Guidelines.[3] The significance thresholds identified by MBUAPCD and used in this analysis are summarized in Table 2.

Table 2. Air Quality Significance Thresholds

Pollutant	Construction Thresholds	Operational Thresholds
	Maximum Daily Emissions (lbs./day)	Average Daily Emissions (lbs./day)
Criteria Air Pollutants		
VOC	Not applicable	137
NO_x	Not applicable	137
CO	Not applicable	550
PM_{10}	82	82
SO_2	Not applicable	150
Greenhouse Gas Emissions		
GHG Annual Emissions	2,000 metric tons[1]	

Note: VOC = volatile organic compound, NO_X = nitrogen oxides, CO = carbon monoxide, PM_{10} = course particulate matter or particulates with an aerodynamic diameter of 10 micrometers (µm) or less, SO_2 = sulfur dioxide; and GHG = greenhouse gas.

2,000 metric tons CO_2e/year metric is the only quantified bright-line threshold considered for land use development projects in a February 2014 MBUAPCD document.

[3] Monterey Bay Unified Air Pollution Control District, *Op. cit*.

TAC Significance Thresholds

The Monterey Bay Unified Air Pollution Control District (MBUAPCD) regulates TACs from new or modified sources under Rule 1000 and a Board approved protocol. These rules and regulations apply to any source that requires a permit to construct or operate pursuant to District Regulation II (Permits) and has the potential to emit carcinogenic or noncarcinogenic TACs. TACs are listed in Title I, California Administrative Code §5155 or are established by the Office of Environmental Health Hazards Assessment (OEHHA), CAPCOA Risk Assessment Guidelines, U.S. Environmental Protection Agency, or Rule 1000, §3.1.2. Rule 1000 also requires sources of carcinogenic TACs to install best control technology and reduce cancer risk to less than one incident per 100,000 population (or 10 incidents in one million). Sources of noncarcinogenic TACS must apply reasonable control technology. There are no rules or regulations that apply to the siting of new sensitive receptors near sources of TACs. The MBAUPCD CEQA Air Quality Guidelines recommend proper siting of a new land use to minimize or eliminate potentially significant air quality impacts. A public agency should avoid siting a sensitive receptor near a source of toxic emissions and vice-versa.

A project, which would be located adjacent to a source of TACs unregulated by Rule 1000, may also result in significant impacts to air quality and human health and require modeling. Common sources of TACs include diesel fueled internal combustion engines, parking areas for diesel fueled heavy duty trucks and buses, gasoline stations and dry cleaners. Since Highway 156 is adjacent to the site, the impact of this source to new sensitive receptors was evaluated. Excess cancer risk from roadway TACs were evaluated, since this is the primary effect from roadway emissions. A cancer risk threshold of 10 in one million excess lifetime cancer cases was used to evaluate the potential significant of this impact. The ten-in-one-million risk level is also used by the Air Toxics "Hot Spots" (AB 2588) program and California's Proposition 65 as the public notification level for air toxic emissions from existing sources.

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

The Air Basin is considered a non-attainment area for ground-level ozone and PM_{10} at the State level. 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}, MBUAPCD has established thresholds of significance for air pollutants. These thresholds are for ozone precursor pollutants (VOC and NO_X), $PM_{10,}$ CO and SO_2 and apply to construction period and operational period impacts. The California Emissions Estimator Model, Version 2013.2.2 (CalEEMod) was used to predict project operational and construction emissions. For the purposes of this assessment, CalEEMod results for ROG (reactive organic gases) were assumed to be VOC. These terms can be used interchangeably.

<u>Construction Period Emissions</u>

Emissions during construction were predicted using the CalEEMod model. Construction of the project is anticipated to begin in early 2016. A project-specific construction phasing schedule and anticipated construction equipment list for use were provided by the project applicant. Modeling also included truck trips from cement and asphalt hauling estimates. As a balanced site, there would be no substantial

transport of soils. CalEEMod output worksheets and construction assumptions are included in *Attachment 1*.

Construction Fugitive Dust and PM_{10} Emissions

During grading and construction activities, dust would be generated. Most of the dust would result during grading activities. The amount of dust generated would be highly variable and is dependent on the size of the area disturbed at any given time, amount of activity, soil conditions and meteorological conditions. Typical winds during late spring through summer are from the southwest. Therefore, maximum daily emissions were computed. CalEEMod modeling results indicated that construction of the project could generate up to 17.3 pounds per day maximum of PM_{10} emissions during the first year of construction and grading activities, which would not exceed the MBUAPCD threshold of 82 pounds per day. This impact would be considered *less than significant*. Although mitigation measures are not required, implementation of dust suppression measures during construction is recommended as a condition of approval to help prevent potential nuisances to nearby receptors due to fugitive dust.

Construction Exhaust Emissions

Construction exhaust emissions of ozone precursors VOC and NO_X would be generated by both on-site activities, including diesel equipment such as dozers, tractors, graders, and pavers, and off-site activities due to materials hauling, and worker and vendor trips. However, based on MBUAPCD CEQA Guidelines, exhaust emissions from these typical construction activities would not result in a significant impact because their emissions are already accounted for the emissions inventories of the State- and federally-required air plans. They would not have a significant impact on the attainment and maintenance of the ozone AAQS and therefore, this impact would be considered *less than significant*.

Recommended Conditions of Approval: Include basic measures to control dust during construction.

While mitigation is not required in regards to PM_{10} emissions, the following Condition of Approval is recommended. During any construction ground disturbance, implement measures to control dust and exhaust. Implementation of the measures recommended by MBUAPCD and listed below would reduce the air quality impacts associated with grading and new construction. The contractors shall implement the following best management practices:

1. Water all active construction areas at least twice daily;
2. Prohibit all grading activities during periods of high wind (i.e., over 15 mph);
3. Cover all trucks hauling dirt, sand or loose materials;
4. Plant vegetative ground cover in disturbed areas as soon as possible after construction and grading;
5. Cover inactive storage piles;
6. Install wheel washers at the entrance to the construction site for all existing trucks;
7. Sweep streets if visible soil material is carried out from the construction site; and
8. Post a publicly visible sign which specifies the telephone number and person to contact regarding dust complaints. This person shall respond to complaints and take corrective action within 48 hours. The phone number of the MBUAPCD shall be visible.

Operational Period Emissions

The CalEEMod model along with the project vehicle trip generation rates were used to predict operational period air pollutant emissions associated with operation of a fully developed site under the proposed project. The model uses mobile emission factors from the California Air Resources Board's EMFAC2011 model. This model is sensitive to the year selected, since vehicle emissions have and continue to be reduced due to more stringent exhaust controls, newer vehicle fleet, fuel efficiency standards and low carbon fuels. Adjustments to the modeling are described below along with the methodology to predict emissions associated with the project fueling station. CalEEMod input and output worksheets are provided in *Attachment 1*.

Year of Analysis

Emissions associated with vehicle travel depend on the year of analysis. The earlier the year, the higher the emission rates as CalEEMod uses the California Air Resources Board's EMFAC2011 motor vehicle emissions model. This model assumes reduced emission rates as newer vehicles with lower emission rates replace older, more polluting vehicles through attrition of the overall vehicle fleet. The earliest full year the project could possibly be operational would be 2018. Full build-out occurring later than 2018 would result in lower emissions.

Land Use Descriptions

The proposed project land use was input to CalEEMod, with 54 dwelling units entered as "Single-Family Housing." This includes the proposed 45 single-family residences and the 9 accessory dwelling units.

Trip Generation Rates and Travel Distances

CalEEMod allows the user to enter specific trip generation rates. Hatch Mott MacDonald provided the trip generation rates for the project, which were entered into the model.

Summary of Project Operational Emissions

Table 3 reports the predicted maximum daily operational emissions. As shown in Table 3, maximum daily emissions associated with project operation would not exceed the MBUAPCD significance thresholds. Therefore, this impact is considered *less than significant*.

Table 3. Daily Air Pollutant Emissions from Operation of the Project (maximum lbs./day)

Scenario	**VOC**	**NO_X**	**CO**	**PM_{10}**	**SO_2**
Proposed Project 2018	89.2	16.9	168.7	18.7	0.1
Daily Emission Thresholds	137	137	550	82	150
Exceed Threshold?	No	No	No	No	No

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

As discussed above, the project would have emissions less than the significance thresholds adopted by MBUAPCD for evaluating impacts to ozone and particulate matter. 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) for years. As a result, the region has been designated as attainment/unclassified for the standard. There is an ambient air quality monitoring station in Santa Cruz that measures carbon monoxide concentrations (the Hollister monitoring station has no recent monitoring data for carbon monoxide). The highest measured level over any 8-hour averaging period during the last 3 years is less than 1.0 parts per million (ppm), compared to the ambient air quality standard of 9.0 ppm. The project would generate traffic that could affect these levels. However, there are no roadway segments or intersections within the basin that have traffic volumes that would approach levels under which CO emissions would exceed air quality standards, and no further emissions modeling for CO was deemed necessary. Therefore, the project does not have the potential to cause a CO violation at affected intersections and this impact would be *less than significant*.

Impact: Expose sensitive receptors to substantial pollutant concentrations?

<u>Project Construction</u>

The proposed project would expose sensitive receptors to temporary emissions of TACs while construction takes place in the vicinity of these receptors. The primary concern for nearby sensitive receptors would be exposure to diesel particulate natter emissions from diesel-powered construction equipment and diesel trucks associated with project construction activities. DPM is designated as a toxic air contaminant by CARB for the cancer risk associated with long-term (i.e., 70 years) exposure. The nearest receptors are residences across Old San Juan Hollister Road. However, as a balanced site, heavy earthmoving work at this site is anticipated to occur for a relatively short period. Therefore, a significant cancer risk based on lifetime exposure would not occur due to the proposed project construction. Specifically, the cancer risk from the proposed project-associated diesel emissions over a 70-year lifetime is expected to be below the significance threshold (10 in one million). Therefore, the impact related to DPM exposure and construction health risk would be less than significant and no mitigation measures would be required.

<u>Project Operation</u>

State Route 156 (Highway 156) at The Alameda in San Juan Bautista has 23,700 average daily trips (ADT), as reported by Caltrans.[4] Highway 156 is the only roadway in the project vicinity expected to potentially result in a significant community risk impact. Other roadways have much lower traffic volumes and are not truck routes. An analysis of the impacts of TACs emitted from Highway 156 traffic

[4] California Department of Transportation, 2014. *2013 Annual Average Daily Truck Traffic on the California State Highway System.*

is necessary to evaluate potential cancer risks. A review of the traffic information reported by Caltrans indicates that Highway 156 traffic includes 14.2 percent trucks, of which 9.7 percent are considered heavy-duty trucks and 4.5 percent are medium-duty trucks.

Emissions Modeling

This analysis involved the development of DPM emissions in the form of $PM_{2.5}$ for traffic on Highway 156 using the CARB EMFAC2011 emission factor model and the traffic mix developed from Caltrans data. DPM emissions are projected to decrease in the future and are reflected in the EMFAC2011 emissions data. CARB regulations require existing on-road diesel trucks to be retrofitted with particulate matter controls or replaced to meet new 2010 engine standards that have much lower DPM and $PM_{2.5}$ emissions. This regulation will substantially reduce these emissions between 2013 and 2023, with the greatest reductions occurring in 2013 through 2015. While new trucks and buses will meet strict federal standards, this measure is intended to accelerate the rate at which the fleet either turns over so there are more cleaner vehicles on the road, or retrofitted to meet similar standards. With this regulation, older, more polluting trucks would be removed from the roads much quicker.

Emission factors were developed for the years 2018 (first assumed potential year of occupancy), 2020, and 2025 using the calculated mix of cars and trucks on Highway 156. Default EMFAC2011 vehicle model fleet age distributions for San Benito County were assumed for emission calculations. A traffic speed of 55 miles per hour was assumed. ADT truck percentages were based on Caltrans data for Highway 156 for 2018. Traffic volumes were assumed to increase 1 percent per year. Average hourly traffic distributions for San Benito County roadways were developed using the EMFAC model,[5] which were then applied to the ADT volumes on Highway 156 to obtain estimated hourly traffic volumes and emissions for the highway near the project site. Year 2025 emissions were conservatively assumed as being representative of future conditions beyond 2025.

Dispersion Modeling

Dispersion modeling of DPM emissions was conducted using the CAL3QHCR model. Inputs to the model included road geometry, hourly traffic volume, emission factors, and meteorological data. One year of hourly meteorological data (1995) for Hollister, prepared by the MBUAPCD, was used in the modeling. East- and west-bound traffic on Highway 156 within about 1,300 feet of the project site was evaluated with the model. The modeling used a grid of receptors with receptors spaced every 15 meters (49 feet) within the residential development. Receptor heights of 1.5 meters (4.9 feet) were used in the modeling to represent the breathing height of residents near ground level. Figure 1 shows the roadway links and receptor locations used in the modeling. The maximum-modeled annual average DPM concentration occurred at a receptor in the northwest corner of the project site, about 70 feet from Highway 156. DPM concentrations decrease with distance from the roadway. Inputs used for the modeling are included in *Attachment 2*.

Computed Cancer Risk

Potential cancer risks from inhalation of toxic air contaminants were calculated based on the annual average concentration, an inhalation dose, and the cancer potency of the TAC. The inhalation dose depends on a person's breathing rate, exposure time and frequency of exposure, and the exposure duration

[5] The Burden output from EMFAC2007, CARB's previous version of the EMFAC model, was used for this since the current web-based version of EMFAC2011 does not include Burden type output with hour by hour traffic volume information.

over a 70-year lifetime period. These parameters vary depending on whether the exposure is considered to occur for a residential location, at a workplace, or at a school. For this analysis, potential exposures to DPM concentrations from traffic on Highway 156 to project residents were evaluated. For residential exposures a breathing rate of 302 liters per day per kilogram of body weight (L/kg-day) was used. Residential receptors are assumed to be exposed for 24 hours per day for 350 days per year over a 70-year exposure period.

The maximum increased cancer risk at the site for a 70-year exposure is modeled to be 11.2 in one million, occurring in the northwest corner of the project site closest to Highway 156, at a distance of about 70 feet from the edge of the roadway. Cancer risks would decrease at increasing distance from Highway 156. Figure 2 shows the distribution of projected cancer risks throughout the project site and the 10 in a million risk contour line. As seen on the figure, only those locations closest to Highway 156 would have increased cancer risks at or above 10 in one million.

Potential non-cancer health effects due to long term (chronic) exposure to DPM were also evaluated. 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). California's Office of Environmental Health and Hazards (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 chronic inhalation REL for DPM is 5 $\mu g/m^3$. The maximum predicted annual DPM exposure is 0.040 $\mu g/m^3$, which is several orders of magnitude lower than the REL. The Hazard Index (HI), which is the ratio of the annual DPM concentration to the REL, is used to evaluate the significance of non-cancer health effects. The maximum HI for the project would be less than 0.009, which is much lower than MBUAPCD HI significance criterion of 1.0.

Under the MBUAPCD CEQA guidelines, an incremental risk of greater than 10 cases in one million or a Hazard Index of greater than 1.0 would be considered a significant impact. A portion of the project site adjacent to Highway 156 could have cancer risks greater than 10 in one million. Based on this analysis, the northern portion of the site, indicated by the 10 in a million cancer risk contour line, is adversely affected by traffic emissions.

Mechanical Ventilation with Filtration

Mechanical ventilation should be installed on an individual unit-by-unit basis, with individual air intake and exhaust ducts ventilating each unit separately in the case of single-family housing. The ventilation system should be certified to achieve certain effectiveness.

The U.S. EPA reports particle size removal efficiency for filters rated MERV13 of 90 percent for particles in the size range of 1 to 3 µm and less than 75 percent for particles 0.3 to 1 µm (see American Society of Heating, Refrigerating and Air Conditioning Engineers).[6,7] A recent study found MERV11 filters to be 69 percent effective at removal of black carbon (assumed to be DPM) in a Las Vegas high school.[8]

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[6] American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc., 2008. *Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size*. ANSI/ASHRAE Addendum b to Standard 52.2-2007

[7] United States Environmental Protection Agency (U.S. EPA), 2009. *Residential Air Cleaners (Second Edition): A Summary of Available Information*. U.S. EPA 402-F-09-002. Revised August.

[8] Indoor Air, 2013. *Filtration Effectiveness of HVAC Systems at Near-Roadway Schools*. 23: 196-207.

In 2012, CARB compiled a synthesis of the status of potential mitigation concepts to reduce exposure to nearby traffic air pollution.[9] Because mechanical ventilation has not been used in residential buildings until recently, there has been limited assessment of its impact on entry of particles and other pollutants into homes. CARB-reviewed studies of homes and schools have shown that high-efficiency filtration in mechanical ventilation systems can be effective in reducing levels of incoming outdoor particles. They noted that one study of residences in Northern California found that the homes with active filtration in a mechanical system had a notably lower portion of indoor particles from outdoors when the systems were on (filtration active) than when they were turned off (no filtration). In another study reviewed by CARB that included modeling study of Korean residential units with mechanical ventilation, filters rated lower than MERV 7 were insufficient for reducing contaminants that enter through the ventilation filter.

Mitigation of Highway 156 Traffic Impacts

The significant exposure for new project receptors is judged by increased cancer risk from DPM. Reducing exposure to diesel exhaust would reduce cancer risk.

The project shall include the following measures to minimize long-term TAC exposure for new project occupants:

1. Design buildings and site to limit exposure from sources of TAC emissions. The site layout shall locate windows and air intakes as far as possible from Highway 156 traffic lanes, using Figure 2 as a guide. Any modifications to the site design shall incorporate buffers between residences and the freeway.

2. To the greatest degree possible, plant vegetation along the project site boundary with Highway156 and around outdoor use areas. This barrier shall include trees and shrubs that provide a dense vegetative barrier.

3. Install air filtration in residential buildings where cancer risk is greater than 10 in one million (see Figure 2). Air filtration devices shall be rated MERV11 or higher. To ensure adequate health protection to sensitive receptors, this ventilation system shall meet the following minimal design standards (following guidance from the Department of Public Health, City and County of San Francisco:[10]
    a. A MERV11 filter or higher rating at receptors shown to exceed 10 in one million (or 1 in 100,000 cancer risk) in Figure 2;
    b. At least one air exchange(s) per hour of fresh outside filtered air; and
    c. At least four air exchange(s) per hour recirculation.

4. Ensure that the property documents include assurance that new owners are provided information on the ventilation system, including cleaning and maintenance requirements.

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[9] California Air Resources Board (CARB), 2012. *Status of Research on Potential Mitigation Concepts to Reduce Exposure to Nearby Traffic Pollution*, August.

[10] Department of Public Health, City and County of San Francisco, 2008. *Assessment and Mitigation of Air Pollutant Health Effects from Intra-urban Roadways: Guidance for Land Use Planning and Environmental Review*. May.

Significance After Mitigation

A properly installed and operated ventilation system with MERV11 air filters may reduce $PM_{2.5}$ concentrations from DPM mobile and stationary sources by approximately 67 percent indoors when compared to outdoors. Increased cancer risks and $PM_{2.5}$ exposures for MERV11 filtration were calculated assuming a combination of outdoor and indoor exposure. For use of MERV11 filtration systems, without the additional use of sealed, inoperable widows and no balconies, 3 hours of outdoor exposure to ambient DPM concentrations and 21 hours of indoor exposure to filtered air was assumed. In this case, the effective control efficiency using a MERV11 filtration system is about 58 percent.

The projected maximum cancer risk associated with use of a MERV11 filtration system would be 4.7 in one million at the location of the maximum unmitigated cancer risk (11.2 in one million). With use of project-specified air filtration systems, exposure to cancer risk throughout the project site would be reduced to levels below the MBUAPCD significance threshold.

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

GHG Significance Thresholds

While the MBUAPCD has no formal recommendation for a quantified GHG threshold for land-use development projects, a February 2013 document published by MBUAPCD recommends the 2,000 metric tons (MT) CO_2e/year metric for further review.[11] This recommendation was made after considering AB 32 goals and scoping plan measures that would reduce regional emissions. Other possible thresholds, such as 1,000 MT CO_2e/year, were specifically not recommended by MBUAPCD. Therefore, for the purposes of this analysis, projects that have emissions below 2,000 MT of CO_2e per year are considered to have less than significant GHG emissions.

Greenhouse gas (GHG) emissions were computed for the full build out scenario of the proposed project. Specifically, operational emissions were computed for the year 2018. As described above, the CalEEMod model was used to compute criteria air pollutant emissions. The model also predicts emissions of GHG in the form of equivalent carbon dioxide emissions or CO_2e.

Construction Period Emissions

The same CalEEMod model that was used to predict criteria pollutant emissions was also used to predict construction GHG emissions. CalEEMod output worksheets are included in *Attachment 1*. CO_2e emissions associated with construction are anticipated to occur in 2016 and 2017. Under this scenario, construction of the project would emit up to 279 MT of CO_2e (in 2016) per year. Neither the City of San Juan Bautista nor the MBUAPCD have quantified thresholds for construction activities. However, this would be less than the MBUAPCD operational threshold of 2,000 MT of CO_2e per year currently under review.

[11] Monterey Bay Unified Air Pollution Control District, 2014. *Receive a Presentation on District GHG Threshold Development*. February.

Operational Period Emissions

The CalEEMod model along with the project vehicle trip generation rates and estimates were used to predict operational period GHG emissions associated with operation of a fully developed site under the proposed project. The model uses mobile emission factors from CARB's EMFAC2011 model. This model is sensitive to the year selected, since vehicle emissions have and continue to be reduced due to fuel efficiency standards and low carbon fuels. Adjustments to the modeling are described below.

Year of Analysis

Emissions associated with vehicle travel depend on the year of analysis. The earlier the year, the higher the emission rates as CalEEMod uses the California Air Resources Board's EMFAC2011 motor vehicle emissions model. This model assumes reduced emission rates as newer vehicles with lower emission rates replace older, more polluting vehicles through attrition of the overall vehicle fleet. The earliest full year the project could possibly be in operation would be 2018. Full build out occurring later than 2018 would result in lower emissions.

Trip Generation Rates

CalEEMod allows the user to enter specific trip generation rates. As described above, Hatch Mott MacDonald provided the trip generation rates for the project, which were entered into the model.

Electricity Generation

Energy usage emissions include those from natural gas combustion and electricity usage. CalEEMod model default energy usage inputs were used in the modeling. CalEEMod 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 PG&E rate was updated to the most recent rate reported in the California Climate Registry for 2013, which is 429.64 pounds of CO_2 per megawatt of electricity produced.[12]

The 2013 Title 24 Building Standards became effective July 1, 2014 and are predicted to use 25 percent less energy for lighting, heating, cooling, ventilation, and water heating than the 2008 standards that CalEEMod incorporates.[13] Therefore, the CalEEMod run was adjusted to account for the greater energy efficiency.

Other Inputs

Default model assumptions for GHG emissions associated with area sources, solid waste generation and water/wastewater use were applied to the project.

<u>GHG Operational Emissions</u>

Table 4 presents the results of the CalEEMod model analysis in terms of annual metric tons of equivalent CO_2 emissions (MT of CO_2e/year). The CalEEMod modeling data are provided in *Attachment 1*.

[12] Climate Registry, 2015. Available online: http://www.theclimateregistry.org/tools-resources/reporting-protocols/general-reporting-protocol/. Accessed: November 6, 2015.
[13] California Energy Commission, 2012. *2013 Building Energy Efficiency Standards FAQ*. May.

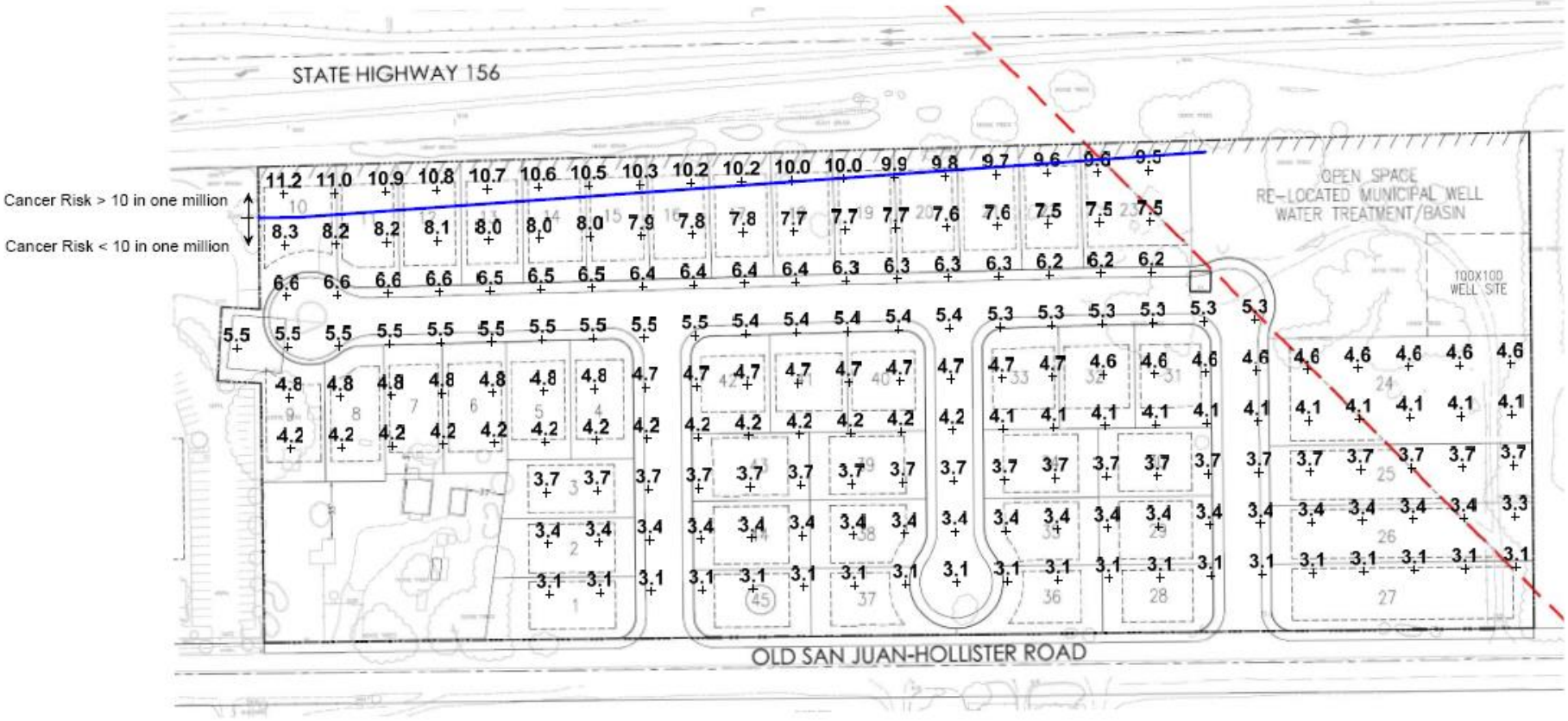
As shown in Table 4, operation of the project would not exceed the current recommendation under consideration by the MBUAPCD of 2,000 MT of CO_2e/yr. This impact is, therefore, considered *less than significant*.

Table 4. Project GHG Emissions (MT CO_2e/year)

Source Category	2018 Proposed Project
Area	83
Energy Consumption	151
Mobile	1,069
Solid Waste Generation	31
Water Usage	10
Total	1,344
Significance Threshold	2,000

Figure 1 – Project Site, Receptor Locations, and Road Segments Modeled

Figure 2 – Cancer Risks (per million) from Highway 156 Vehicle DPM Emissions



Attachment 1: CalEEMod Input and Output

Copperleaf Subdivision, San Juan Bautista

San Benito County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	54.00	Dwelling Unit	12.60	81,000.00	154

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	50
Climate Zone	4			**Operational Year**	2018
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	429.64	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Using current verified PG&E rate.

Land Use - Lot acreage and sf from construction data request spreadsheet

Construction Phase - Anticipated construction schedule provided by project applicant.

Off-road Equipment - Proposed equipment list provided by project applicant

Off-road Equipment - Proposed equipment list provided by project applicant

Off-road Equipment - Proposed equipment list provided by project applicant

Off-road Equipment - Proposed equipment list provided by project applicant

Off-road Equipment - Proposed equipment list provided by project applicant

Off-road Equipment - Proposed equipment list provided by project applicant

Trips and VMT - Bldg Constr: 180 one-way trips @50 mi RT. Paving: 4,500 CY @ 16 CY/truck = 564 one-way trips.

Vehicle Trips - Trip generation from project traffic report

Energy Use - 2013 Title 24 standards 25% more energy-efficient than 2008 standards.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	328.00
tblConstructionPhase	NumDays	300.00	391.00
tblConstructionPhase	NumDays	30.00	15.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	10.00	5.00
tblConstructionPhase	PhaseEndDate	1/2/2019	9/1/2017
tblConstructionPhase	PhaseEndDate	10/3/2017	9/30/2017
tblConstructionPhase	PhaseEndDate	2/26/2016	3/1/2016
tblConstructionPhase	PhaseEndDate	3/22/2016	3/21/2016
tblConstructionPhase	PhaseStartDate	10/1/2017	6/1/2016
tblConstructionPhase	PhaseStartDate	4/5/2016	4/1/2016
tblConstructionPhase	PhaseStartDate	2/6/2016	2/10/2016
tblConstructionPhase	PhaseStartDate	3/2/2016	3/1/2016
tblEnergyUse	LightingElect	1,608.84	1,206.63
tblEnergyUse	T24E	368.61	276.46
tblEnergyUse	T24NG	29,406.10	22,054.58
tblLandUse	LandUseSquareFeet	97,200.00	81,000.00
tblLandUse	LotAcreage	17.53	12.60
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	3.30

tblOffRoadEquipment	UsageHours	7.00	1.50
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	1.50
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	7.00	1.50
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	429.64
tblProjectCharacteristics	OperationalYear	2014	2018
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripNumber	0.00	564.00
tblTripsAndVMT	HaulingTripNumber	0.00	180.00
tblVehicleTrips	ST_TR	10.08	9.37
tblVehicleTrips	SU_TR	8.77	8.16
tblVehicleTrips	WD_TR	9.57	8.87

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					

2016	0.9017	2.5941	2.1259	3.1400e-003	0.1646	0.1612	0.3258	0.0694	0.1544	0.2238	0.0000	278.3341	278.3341	0.0490	0.0000	279.3639
2017	0.8792	1.5127	1.3809	2.2000e-003	0.0324	0.1025	0.1348	8.6600e-003	0.0999	0.1085	0.0000	188.9948	188.9948	0.0272	0.0000	189.5654
Total	**1.7808**	**4.1068**	**3.5069**	**5.3400e-003**	**0.1969**	**0.2636**	**0.4606**	**0.0781**	**0.2542**	**0.3323**	**0.0000**	**467.3289**	**467.3289**	**0.0762**	**0.0000**	**468.9293**

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	3.8486	0.0525	4.7348	1.6600e-003		0.5895	0.5895		0.5895	0.5895	55.7797	24.3029	80.0826	0.0524	4.3900e-003	82.5426
Energy	8.1300e-003	0.0695	0.0296	4.4000e-004		5.6200e-003	5.6200e-003		5.6200e-003	5.6200e-003	0.0000	149.7188	149.7188	6.2200e-003	2.4400e-003	150.6065
Mobile	0.5952	2.5463	8.2652	0.0133	0.6867	0.0351	0.7218	0.1846	0.0323	0.2169	0.0000	1,068.1066	1,068.1066	0.0314	0.0000	1,068.7657
Waste						0.0000	0.0000		0.0000	0.0000	13.7547	0.0000	13.7547	0.8129	0.0000	30.8251
Water						0.0000	0.0000		0.0000	0.0000	1.1162	5.2230	6.3392	0.1150	2.7800e-003	9.6159
Total	**4.4520**	**2.6683**	**13.0296**	**0.0154**	**0.6867**	**0.6302**	**1.3169**	**0.1846**	**0.6274**	**0.8120**	**70.6506**	**1,247.3513**	**1,318.0018**	**1.0179**	**9.6100e-003**	**1,342.3559**

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	2/1/2016	2/5/2016	5	5	
2	Grading	Grading	2/10/2016	3/1/2016	5	15	
3	Trenching	Trenching	3/1/2016	3/21/2016	5	15	
4	Paving	Paving	3/22/2016	4/4/2016	5	10	

5	Building Construction	Building Construction	4/1/2016	9/30/2017	5	391	
6	Architectural Coating	Architectural Coating	6/1/2016	9/1/2017	5	328	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 39.38

Acres of Paving: 0

Residential Indoor: 164,025; Residential Outdoor: 54,675; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating –

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	6.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Grading	Excavators	2	6.00	162	0.38
Grading	Graders	3	6.00	174	0.41
Grading	Rubber Tired Dozers	2	6.00	255	0.40
Grading	Scrapers	2	6.00	361	0.48
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Trenching	Excavators	2	6.00	162	0.38
Trenching	Tractors/Loaders/Backhoes	3	6.00	97	0.37
Paving	Pavers	1	8.00	125	0.42
Paving	Paving Equipment	2	6.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	2	4.00	97	0.37
Building Construction	Air Compressors	5	3.20	78	0.48
Building Construction	Cranes	2	1.50	226	0.29
Building Construction	Forklifts	3	1.50	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	2	1.50	97	0.37
Building Construction	Welders	0	8.00	46	0.45
Architectural Coating	Aerial Lifts	2	3.30	62	0.31

Architectural Coating	Air Compressors	3	3.30	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
Site Preparation	5	13.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	11	28.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	5	13.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	564.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	12	19.00	6.00	180.00	16.80	6.60	25.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	5	4.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2016

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					0.0339	0.0000	0.0339	0.0186	0.0000	0.0186	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.2400e-003	0.0902	0.0680	6.0000e-005		4.5700e-003	4.5700e-003		4.2000e-003	4.2000e-003	0.0000	5.8133	5.8133	1.7500e-003	0.0000	5.8502
Total	**8.2400e-003**	**0.0902**	**0.0680**	**6.0000e-005**	**0.0339**	**4.5700e-003**	**0.0384**	**0.0186**	**4.2000e-003**	**0.0228**	**0.0000**	**5.8133**	**5.8133**	**1.7500e-003**	**0.0000**	**5.8502**

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	1.6000e-004	3.0000e-004	2.6500e-003	0.0000	4.0000e-004	0.0000	4.1000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3419	0.3419	2.0000e-005	0.0000	0.3424
Total	**1.6000e-004**	**3.0000e-004**	**2.6500e-003**	**0.0000**	**4.0000e-004**	**0.0000**	**4.1000e-004**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.3419**	**0.3419**	**2.0000e-005**	**0.0000**	**0.3424**

3.3 Grading - 2016

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					0.0886	0.0000	0.0886	0.0395	0.0000	0.0395	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0549	0.6156	0.3908	4.7000e-004		0.0304	0.0304		0.0279	0.0279	0.0000	44.0750	44.0750	0.0133	0.0000	44.3542
Total	**0.0549**	**0.6156**	**0.3908**	**4.7000e-004**	**0.0886**	**0.0304**	**0.1190**	**0.0395**	**0.0279**	**0.0674**	**0.0000**	**44.0750**	**44.0750**	**0.0133**	**0.0000**	**44.3542**

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	1.0100e-003	1.9300e-003	0.0171	3.0000e-005	2.6000e-003	2.0000e-005	2.6200e-003	6.9000e-004	2.0000e-005	7.1000e-004	0.0000	2.2093	2.2093	1.4000e-004	0.0000	2.2122
Total	**1.0100e-003**	**1.9300e-003**	**0.0171**	**3.0000e-005**	**2.6000e-003**	**2.0000e-005**	**2.6200e-003**	**6.9000e-004**	**2.0000e-005**	**7.1000e-004**	**0.0000**	**2.2093**	**2.2093**	**1.4000e-004**	**0.0000**	**2.2122**

3.4 Trenching - 2016

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	0.0101	0.1048	0.0793	1.1000e-004		6.6800e-003	6.6800e-003		6.1500e-003	6.1500e-003	0.0000	10.5675	10.5675	3.1900e-003	0.0000	10.6344
Total	**0.0101**	**0.1048**	**0.0793**	**1.1000e-004**		**6.6800e-003**	**6.6800e-003**		**6.1500e-003**	**6.1500e-003**	**0.0000**	**10.5675**	**10.5675**	**3.1900e-003**	**0.0000**	**10.6344**

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	9.0000e-004	7.9500e-003	1.0000e-005	1.2100e-003	1.0000e-005	1.2200e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0258	1.0258	6.0000e-005	0.0000	1.0271
Total	**4.7000e-004**	**9.0000e-004**	**7.9500e-003**	**1.0000e-005**	**1.2100e-003**	**1.0000e-005**	**1.2200e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0258**	**1.0258**	**6.0000e-005**	**0.0000**	**1.0271**

3.5 Paving - 2016

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	9.3800e-003	0.0967	0.0655	9.0000e-005		5.9900e-003	5.9900e-003		5.5100e-003	5.5100e-003	0.0000	8.9026	8.9026	2.6900e-003	0.0000	8.9590
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.3800e-003**	**0.0967**	**0.0655**	**9.0000e-005**		**5.9900e-003**	**5.9900e-003**		**5.5100e-003**	**5.5100e-003**	**0.0000**	**8.9026**	**8.9026**	**2.6900e-003**	**0.0000**	**8.9590**

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	7.4400e-003	0.0755	0.1018	2.1000e-004	4.8000e-003	1.1900e-003	5.9800e-003	1.3200e-003	1.0900e-003	2.4100e-003	0.0000	19.3270	19.3270	1.4000e-004	0.0000	19.3300
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	4.3000e-004	8.3000e-004	7.3300e-003	1.0000e-005	1.1200e-003	1.0000e-005	1.1200e-003	3.0000e-004	1.0000e-005	3.0000e-004	0.0000	0.9469	0.9469	6.0000e-005	0.0000	0.9481
Total	**7.8700e-003**	**0.0764**	**0.1091**	**2.2000e-004**	**5.9200e-003**	**1.2000e-003**	**7.1000e-003**	**1.6200e-003**	**1.1000e-003**	**2.7100e-003**	**0.0000**	**20.2739**	**20.2739**	**2.0000e-004**	**0.0000**	**20.2781**

3.6 Building Construction - 2016

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	0.1478	1.1608	0.7603	1.1800e-003		0.0838	0.0838		0.0812	0.0812	0.0000	104.9981	104.9981	0.0194	0.0000	105.4057
Total	**0.1478**	**1.1608**	**0.7603**	**1.1800e-003**		**0.0838**	**0.0838**		**0.0812**	**0.0812**	**0.0000**	**104.9981**	**104.9981**	**0.0194**	**0.0000**	**105.4057**

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	1.3100e-003	0.0148	0.0169	4.0000e-005	1.6800e-003	2.4000e-004	1.9100e-003	4.4000e-004	2.2000e-004	6.6000e-004	0.0000	3.8472	3.8472	3.0000e-005	0.0000	3.8478
Vendor	8.9200e-003	0.0540	0.1253	1.3000e-004	3.4100e-003	8.9000e-004	4.2900e-003	9.7000e-004	8.1000e-004	1.7900e-003	0.0000	11.4179	11.4179	1.0000e-004	0.0000	11.4199
Worker	8.9600e-003	0.0171	0.1517	2.6000e-004	0.0231	1.7000e-004	0.0233	6.1300e-003	1.6000e-004	6.2900e-003	0.0000	19.5892	19.5892	1.2000e-003	0.0000	19.6144
Total	**0.0192**	**0.0860**	**0.2940**	**4.3000e-004**	**0.0282**	**1.3000e-003**	**0.0295**	**7.5400e-003**	**1.1900e-003**	**8.7400e-003**	**0.0000**	**34.8543**	**34.8543**	**1.3300e-003**	**0.0000**	**34.8822**

3.6 Building Construction - 2017

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	0.1332	1.0608	0.7425	1.1800e-003		0.0742	0.0742		0.0719	0.0719	0.0000	103.8617	103.8617	0.0185	0.0000	104.2500
Total	**0.1332**	**1.0608**	**0.7425**	**1.1800e-003**		**0.0742**	**0.0742**		**0.0719**	**0.0719**	**0.0000**	**103.8617**	**103.8617**	**0.0185**	**0.0000**	**104.2500**

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	1.2200e-003	0.0128	0.0160	4.0000e-005	1.6700e-003	2.0000e-004	1.8800e-003	4.4000e-004	1.9000e-004	6.2000e-004	0.0000	3.7616	3.7616	3.0000e-005	0.0000	3.7621
Vendor	8.2200e-003	0.0478	0.1174	1.3000e-004	3.3900e-003	7.5000e-004	4.1400e-003	9.7000e-004	6.9000e-004	1.6600e-003	0.0000	11.1741	11.1741	9.0000e-005	0.0000	11.1760
Worker	7.5500e-003	0.0151	0.1324	2.6000e-004	0.0230	1.6000e-004	0.0231	6.1000e-003	1.5000e-004	6.2500e-003	0.0000	18.7328	18.7328	1.0800e-003	0.0000	18.7555
Total	**0.0170**	**0.0757**	**0.2658**	**4.3000e-004**	**0.0280**	**1.1100e-003**	**0.0291**	**7.5100e-003**	**1.0300e-003**	**8.5300e-003**	**0.0000**	**33.6685**	**33.6685**	**1.2000e-003**	**0.0000**	**33.6936**

3.7 Architectural Coating - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5911					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0501	0.3577	0.3063	4.8000e-004		0.0272	0.0272		0.0270	0.0270	0.0000	42.0532	42.0532	6.7600e-003	0.0000	42.1952

Total	**0.6411**	**0.3577**	**0.3063**	**4.8000e-004**		**0.0272**	**0.0272**		**0.0270**	**0.0270**	**0.0000**	**42.0532**	**42.0532**	**6.7600e-003**	**0.0000**	**42.1952**

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	1.4700e-003	2.8100e-003	0.0249	4.0000e-005	3.7900e-003	3.0000e-005	3.8200e-003	1.0100e-003	3.0000e-005	1.0300e-003	0.0000	3.2193	3.2193	2.0000e-004	0.0000	3.2234
Total	**1.4700e-003**	**2.8100e-003**	**0.0249**	**4.0000e-005**	**3.7900e-003**	**3.0000e-005**	**3.8200e-003**	**1.0100e-003**	**3.0000e-005**	**1.0300e-003**	**0.0000**	**3.2193**	**3.2193**	**2.0000e-004**	**0.0000**	**3.2234**

3.7 Architectural Coating - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.6760					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0515	0.3733	0.3476	5.5000e-004		0.0271	0.0271		0.0269	0.0269	0.0000	47.9254	47.9254	7.2800e-003	0.0000	48.0783
Total	**0.7275**	**0.3733**	**0.3476**	**5.5000e-004**		**0.0271**	**0.0271**		**0.0269**	**0.0269**	**0.0000**	**47.9254**	**47.9254**	**7.2800e-003**	**0.0000**	**48.0783**

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	1.4300e-003	2.8500e-003	0.0250	5.0000e-005	4.3400e-003	3.0000e-005	4.3700e-003	1.1500e-003	3.0000e-005	1.1800e-003	0.0000	3.5393	3.5393	2.0000e-004	0.0000	3.5435
Total	**1.4300e-003**	**2.8500e-003**	**0.0250**	**5.0000e-005**	**4.3400e-003**	**3.0000e-005**	**4.3700e-003**	**1.1500e-003**	**3.0000e-005**	**1.1800e-003**	**0.0000**	**3.5393**	**3.5393**	**2.0000e-004**	**0.0000**	**3.5435**

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					
Unmitigated	0.5952	2.5463	8.2652	0.0133	0.6867	0.0351	0.7218	0.1846	0.0323	0.2169	0.0000	1,068.1066	1,068.1066	0.0314	0.0000	1,068.7657

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	478.98	505.98	440.64	1,799,487	1,799,487
Total	478.98	505.98	440.64	1,799,487	1,799,487

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
Single Family Housing	16.80	7.10	7.90	44.00	18.80	37.20	86	11	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.351872	0.035683	0.185942	0.163546	0.059093	0.008748	0.012741	0.167664	0.001409	0.001215	0.008676	0.000530	0.002883

5.0 Energy Detail

4.4 Fleet Mix

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 Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	69.2303	69.2303	4.6700e-003	9.7000e-004	69.6282
NaturalGas Unmitigated	8.1300e-003	0.0695	0.0296	4.4000e-004		5.6200e-003	5.6200e-003		5.6200e-003	5.6200e-003	0.0000	80.4885	80.4885	1.5400e-003	1.4800e-003	80.9784

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					

Single Family Housing	1.5083e+006	8.1300e-003	0.0695	0.0296	4.4000e-004		5.6200e-003	5.6200e-003		5.6200e-003	5.6200e-003	0.0000	80.4885	80.4885	1.5400e-003	1.4800e-003	80.9784
Total		**8.1300e-003**	**0.0695**	**0.0296**	**4.4000e-004**		**5.6200e-003**	**5.6200e-003**		**5.6200e-003**	**5.6200e-003**	**0.0000**	**80.4885**	**80.4885**	**1.5400e-003**	**1.4800e-003**	**80.9784**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	355243	69.2303	4.6700e-003	9.7000e-004	69.6282
Total		**69.2303**	**4.6700e-003**	**9.7000e-004**	**69.6282**

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					
Unmitigated	3.8486	0.0525	4.7348	1.6600e-003		0.5895	0.5895		0.5895	0.5895	55.7797	24.3029	80.0826	0.0524	4.3900e-003	82.5426

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	0.1267					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3164					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	3.3883	0.0460	4.1740	1.6300e-003		0.5864	0.5864		0.5864	0.5864	55.7797	23.3932	79.1729	0.0515	4.3900e-003	81.6140
Landscaping	0.0173	6.5100e-003	0.5608	3.0000e-005		3.0600e-003	3.0600e-003		3.0600e-003	3.0600e-003	0.0000	0.9097	0.9097	9.0000e-004	0.0000	0.9286
Total	**3.8486**	**0.0525**	**4.7348**	**1.6600e-003**		**0.5895**	**0.5895**		**0.5895**	**0.5895**	**55.7797**	**24.3029**	**80.0826**	**0.0524**	**4.3900e-003**	**82.5426**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Unmitigated	6.3392	0.1150	2.7800e-003	9.6159

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	3.51832 / 2.21807	6.3392	0.1150	2.7800e-003	9.6159
Total		**6.3392**	**0.1150**	**2.7800e-003**	**9.6159**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Unmitigated	13.7547	0.8129	0.0000	30.8251

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e

Land Use	tons	MT/yr			
Single Family Housing	67.76	13.7547	0.8129	0.0000	30.8251
Total		**13.7547**	**0.8129**	**0.0000**	**30.8251**

9.0 Operational Offroad

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

10.0 Vegetation

Copperleaf Subdivision, San Juan Bautista

San Benito County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	54.00	Dwelling Unit	12.60	81,000.00	154

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	50
Climate Zone	4			**Operational Year**	2018
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	429.64	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Using current verified PG&E rate.

Land Use - Lot acreage and sf from construction data request spreadsheet

Construction Phase - Anticipated construction schedule provided by project applicant.

Off-road Equipment - Proposed equipment list provided by project applicant

Off-road Equipment - Proposed equipment list provided by project applicant

Off-road Equipment - Proposed equipment list provided by project applicant

Off-road Equipment - Proposed equipment list provided by project applicant

Off-road Equipment - Proposed equipment list provided by project applicant

Off-road Equipment - Proposed equipment list provided by project applicant

Trips and VMT - Bldg Constr: 180 one-way trips @50 mi RT. Paving: 4,500 CY @ 16 CY/truck = 564 one-way trips.

Vehicle Trips - Trip generation from project traffic report

Energy Use - 2013 Title 24 standards 25% more energy-efficient than 2008 standards.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	328.00
tblConstructionPhase	NumDays	300.00	391.00
tblConstructionPhase	NumDays	30.00	15.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	10.00	5.00
tblConstructionPhase	PhaseEndDate	1/2/2019	9/1/2017
tblConstructionPhase	PhaseEndDate	10/3/2017	9/30/2017
tblConstructionPhase	PhaseEndDate	2/26/2016	3/1/2016
tblConstructionPhase	PhaseEndDate	3/22/2016	3/21/2016
tblConstructionPhase	PhaseStartDate	10/1/2017	6/1/2016
tblConstructionPhase	PhaseStartDate	4/5/2016	4/1/2016
tblConstructionPhase	PhaseStartDate	2/6/2016	2/10/2016
tblConstructionPhase	PhaseStartDate	3/2/2016	3/1/2016
tblEnergyUse	LightingElect	1,608.84	1,206.63
tblEnergyUse	T24E	368.61	276.46
tblEnergyUse	T24NG	29,406.10	22,054.58
tblLandUse	LandUseSquareFeet	97,200.00	81,000.00
tblLandUse	LotAcreage	17.53	12.60
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	3.30

tblOffRoadEquipment	UsageHours	7.00	1.50
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	1.50
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	7.00	1.50
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	429.64
tblProjectCharacteristics	OperationalYear	2014	2018
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripNumber	0.00	564.00
tblTripsAndVMT	HaulingTripNumber	0.00	180.00
tblVehicleTrips	ST_TR	10.08	9.37
tblVehicleTrips	SU_TR	8.77	8.16
tblVehicleTrips	WD_TR	9.57	8.87

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

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	lb/day										lb/day					

2016	10.0902	96.3832	66.1920	0.0834	13.7157	4.9416	17.2826	7.4921	4.5463	9.9511	0.0000	8,539.9456	8,539.9456	2.4516	0.0000	8,591.4288
2017	9.8600	15.9115	14.2255	0.0235	0.3472	1.0825	1.4296	0.0927	1.0557	1.1484	0.0000	2,221.7533	2,221.7533	0.3169	0.0000	2,228.4073
Total	**19.9503**	**112.2947**	**80.4174**	**0.1069**	**14.0629**	**6.0241**	**18.7122**	**7.5847**	**5.6020**	**11.0995**	**0.0000**	**10,761.6989**	**10,761.6989**	**2.7684**	**0.0000**	**10,819.8361**

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	lb/day										lb/day					
Area	85.2073	1.1733	106.2918	0.0400		14.3275	14.3275		14.3271	14.3271	1,499.6735	636.9630	2,136.6365	1.3919	0.1180	2,202.4342
Energy	0.0446	0.3808	0.1621	2.4300e-003		0.0308	0.0308		0.0308	0.0308		486.1556	486.1556	9.3200e-003	8.9100e-003	489.1143
Mobile	3.2184	14.1031	38.6992	0.0801	4.1178	0.2041	4.3219	1.1042	0.1878	1.2920		7,069.8282	7,069.8282	0.2015		7,074.0588
Total	**88.4703**	**15.6572**	**145.1530**	**0.1226**	**4.1178**	**14.5624**	**18.6802**	**1.1042**	**14.5457**	**15.6498**	**1,499.6735**	**8,192.9468**	**9,692.6203**	**1.6027**	**0.1269**	**9,765.6072**

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	2/1/2016	2/5/2016	5	5	
2	Grading	Grading	2/10/2016	3/1/2016	5	15	
3	Trenching	Trenching	3/1/2016	3/21/2016	5	15	
4	Paving	Paving	3/22/2016	4/4/2016	5	10	
5	Building Construction	Building Construction	4/1/2016	9/30/2017	5	391	
6	Architectural Coating	Architectural Coating	6/1/2016	9/1/2017	5	328	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 39.38

Acres of Paving: 0

Residential Indoor: 164,025; Residential Outdoor: 54,675; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating –

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	6.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Grading	Excavators	2	6.00	162	0.38
Grading	Graders	3	6.00	174	0.41
Grading	Rubber Tired Dozers	2	6.00	255	0.40
Grading	Scrapers	2	6.00	361	0.48
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Trenching	Excavators	2	6.00	162	0.38
Trenching	Tractors/Loaders/Backhoes	3	6.00	97	0.37
Paving	Pavers	1	8.00	125	0.42
Paving	Paving Equipment	2	6.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	2	4.00	97	0.37
Building Construction	Air Compressors	5	3.20	78	0.48
Building Construction	Cranes	2	1.50	226	0.29
Building Construction	Forklifts	3	1.50	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	2	1.50	97	0.37
Building Construction	Welders	0	8.00	46	0.45
Architectural Coating	Aerial Lifts	2	3.30	62	0.31
Architectural Coating	Air Compressors	3	3.30	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
Site Preparation	5	13.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	11	28.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	5	13.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	564.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	12	19.00	6.00	180.00	16.80	6.60	25.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	5	4.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2016

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	lb/day										lb/day					
Fugitive Dust					13.5497	0.0000	13.5497	7.4480	0.0000	7.4480			0.0000			0.0000
Off-Road	3.2969	36.0916	27.2100	0.0246		1.8281	1.8281		1.6818	1.6818		2,563.2380	2,563.2380	0.7732		2,579.4745
Total	**3.2969**	**36.0916**	**27.2100**	**0.0246**	**13.5497**	**1.8281**	**15.3778**	**7.4480**	**1.6818**	**9.1298**		**2,563.2380**	**2,563.2380**	**0.7732**		**2,579.4745**

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	lb/day											lb/day				
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
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
Worker	0.0646	0.1046	1.1139	1.9500e-003	0.1661	1.1900e-003	0.1672	0.0440	1.0900e-003	0.0451		161.3505	161.3505	9.2300e-003		161.5444
Total	**0.0646**	**0.1046**	**1.1139**	**1.9500e-003**	**0.1661**	**1.1900e-003**	**0.1672**	**0.0440**	**1.0900e-003**	**0.0451**		**161.3505**	**161.3505**	**9.2300e-003**		**161.5444**

3.3 Grading - 2016

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	lb/day										lb/day					
Fugitive Dust					11.8173	0.0000	11.8173	5.2660	0.0000	5.2660			0.0000			0.0000
Off-Road	7.3164	82.0832	52.1080	0.0623		4.0469	4.0469		3.7232	3.7232		6,477.9200	6,477.9200	1.9540		6,518.9533
Total	**7.3164**	**82.0832**	**52.1080**	**0.0623**	**11.8173**	**4.0469**	**15.8642**	**5.2660**	**3.7232**	**8.9891**		**6,477.9200**	**6,477.9200**	**1.9540**		**6,518.9533**

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	lb/day										lb/day					
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
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

Worker	0.1391	0.2253	2.3991	4.2000e-003	0.3577	2.5700e-003	0.3602	0.0948	2.3400e-003	0.0972		347.5241	347.5241	0.0199		347.9418
Total	**0.1391**	**0.2253**	**2.3991**	**4.2000e-003**	**0.3577**	**2.5700e-003**	**0.3602**	**0.0948**	**2.3400e-003**	**0.0972**		**347.5241**	**347.5241**	**0.0199**		**347.9418**

3.4 Trenching - 2016

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	lb/day										lb/day					
Off-Road	1.3486	13.9701	10.5710	0.0150		0.8909	0.8909		0.8197	0.8197		1,553.1510	1,553.1510	0.4685		1,562.9892
Total	**1.3486**	**13.9701**	**10.5710**	**0.0150**		**0.8909**	**0.8909**		**0.8197**	**0.8197**		**1,553.1510**	**1,553.1510**	**0.4685**		**1,562.9892**

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	lb/day										lb/day					
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
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
Worker	0.0646	0.1046	1.1139	1.9500e-003	0.1661	1.1900e-003	0.1672	0.0440	1.0900e-003	0.0451		161.3505	161.3505	9.2300e-003		161.5444
Total	**0.0646**	**0.1046**	**1.1139**	**1.9500e-003**	**0.1661**	**1.1900e-003**	**0.1672**	**0.0440**	**1.0900e-003**	**0.0451**		**161.3505**	**161.3505**	**9.2300e-003**		**161.5444**

3.5 Paving - 2016

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	lb/day										lb/day					
Off-Road	1.8757	19.3444	13.1065	0.0189		1.1988	1.1988		1.1029	1.1029		1,962.6856	1,962.6856	0.5920		1,975.1179
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.8757**	**19.3444**	**13.1065**	**0.0189**		**1.1988**	**1.1988**		**1.1029**	**1.1029**		**1,962.6856**	**1,962.6856**	**0.5920**		**1,975.1179**

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	lb/day										lb/day					
Hauling	1.2713	14.5662	13.2922	0.0424	0.9846	0.2371	1.2218	0.2697	0.2182	0.4879		4,265.0610	4,265.0610	0.0310		4,265.7125
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
Worker	0.0894	0.1448	1.5423	2.7000e-003	0.2299	1.6500e-003	0.2316	0.0610	1.5100e-003	0.0625		223.4084	223.4084	0.0128		223.6769
Total	**1.3608**	**14.7110**	**14.8345**	**0.0451**	**1.2145**	**0.2388**	**1.4533**	**0.3307**	**0.2197**	**0.5504**		**4,488.4693**	**4,488.4693**	**0.0438**		**4,489.3894**

3.6 Building Construction - 2016

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	lb/day										lb/day					
Off-Road	1.5080	11.8447	7.7583	0.0121		0.8553	0.8553		0.8289	0.8289		1,181.0262	1,181.0262	0.2183		1,185.6113
Total	**1.5080**	**11.8447**	**7.7583**	**0.0121**		**0.8553**	**0.8553**		**0.8289**	**0.8289**		**1,181.0262**	**1,181.0262**	**0.2183**		**1,185.6113**

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	lb/day										lb/day					
Hauling	0.0116	0.1459	0.1149	4.3000e-004	0.0176	2.4100e-003	0.0200	4.6100e-003	2.2200e-003	6.8300e-003		43.3082	43.3082	3.1000e-004		43.3147
Vendor	0.0760	0.5332	0.8377	1.2900e-003	0.0357	8.9800e-003	0.0447	0.0101	8.2600e-003	0.0184		128.8870	128.8870	1.0800e-003		128.9097
Worker	0.0944	0.1529	1.6279	2.8500e-003	0.2427	1.7400e-003	0.2444	0.0644	1.5900e-003	0.0660		235.8200	235.8200	0.0135		236.1034
Total	**0.1820**	**0.8320**	**2.5806**	**4.5700e-003**	**0.2960**	**0.0131**	**0.3091**	**0.0791**	**0.0121**	**0.0912**		**408.0152**	**408.0152**	**0.0149**		**408.3278**

3.6 Building Construction - 2017

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	lb/day										lb/day					
Off-Road	1.3666	10.8804	7.6155	0.0121		0.7614	0.7614		0.7375	0.7375		1,174.2350	1,174.2350	0.2091		1,178.6254

Total	**1.3666**	**10.8804**	**7.6155**	**0.0121**		**0.7614**	**0.7614**		**0.7375**	**0.7375**		**1,174.2350**	**1,174.2350**	**0.2091**		**1,178.6254**

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	lb/day										lb/day					
Hauling	0.0109	0.1270	0.1095	4.3000e-004	0.0177	2.0600e-003	0.0198	4.6300e-003	1.9000e-003	6.5200e-003		42.5614	42.5614	2.9000e-004		42.5674
Vendor	0.0704	0.4739	0.7889	1.2900e-003	0.0357	7.6300e-003	0.0433	0.0101	7.0100e-003	0.0172		126.7839	126.7839	1.0000e-003		126.8050
Worker	0.0807	0.1354	1.4364	2.8400e-003	0.2427	1.6500e-003	0.2443	0.0644	1.5100e-003	0.0659		226.6921	226.6921	0.0122		226.9484
Total	**0.1620**	**0.7363**	**2.3348**	**4.5600e-003**	**0.2961**	**0.0113**	**0.3074**	**0.0791**	**0.0104**	**0.0895**		**396.0374**	**396.0374**	**0.0135**		**396.3208**

3.7 Architectural Coating - 2016

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	lb/day										lb/day					
Archit. Coating	7.7262					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.6543	4.6755	4.0037	6.2700e-003		0.3557	0.3557		0.3532	0.3532		605.9567	605.9567	0.0975		608.0032
Total	**8.3804**	**4.6755**	**4.0037**	**6.2700e-003**		**0.3557**	**0.3557**		**0.3532**	**0.3532**		**605.9567**	**605.9567**	**0.0975**		**608.0032**

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	lb/day										lb/day					
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
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
Worker	0.0199	0.0322	0.3427	6.0000e-004	0.0511	3.7000e-004	0.0515	0.0136	3.3000e-004	0.0139		49.6463	49.6463	2.8400e-003		49.7060
Total	**0.0199**	**0.0322**	**0.3427**	**6.0000e-004**	**0.0511**	**3.7000e-004**	**0.0515**	**0.0136**	**3.3000e-004**	**0.0139**		**49.6463**	**49.6463**	**2.8400e-003**		**49.7060**

3.7 Architectural Coating - 2017

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	lb/day										lb/day					
Archit. Coating	7.7262					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.5882	4.2663	3.9728	6.2700e-003		0.3093	0.3093		0.3075	0.3075		603.7562	603.7562	0.0917		605.6826
Total	**8.3144**	**4.2663**	**3.9728**	**6.2700e-003**		**0.3093**	**0.3093**		**0.3075**	**0.3075**		**603.7562**	**603.7562**	**0.0917**		**605.6826**

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	lb/day											lb/day				
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
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
Worker	0.0170	0.0285	0.3024	6.0000e-004	0.0511	3.5000e-004	0.0514	0.0136	3.2000e-004	0.0139		47.7247	47.7247	2.5700e-003		47.7786
Total	**0.0170**	**0.0285**	**0.3024**	**6.0000e-004**	**0.0511**	**3.5000e-004**	**0.0514**	**0.0136**	**3.2000e-004**	**0.0139**		**47.7247**	**47.7247**	**2.5700e-003**		**47.7786**

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	lb/day										lb/day					
Unmitigated	3.2184	14.1031	38.6992	0.0801	4.1178	0.2041	4.3219	1.1042	0.1878	1.2920		7,069.8282	7,069.8282	0.2015		7,074.0588

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	478.98	505.98	440.64	1,799,487	1,799,487
Total	478.98	505.98	440.64	1,799,487	1,799,487

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
Single Family Housing	16.80	7.10	7.90	44.00	18.80	37.20	86	11	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.351872	0.035683	0.185942	0.163546	0.059093	0.008748	0.012741	0.167664	0.001409	0.001215	0.008676	0.000530	0.002883

5.0 Energy Detail

4.4 Fleet Mix

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	lb/day										lb/day					
NaturalGas Unmitigated	0.0446	0.3808	0.1621	2.4300e-003		0.0308	0.0308		0.0308	0.0308		486.1556	486.1556	9.3200e-003	8.9100e-003	489.1143

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	lb/day										lb/day					
Single Family Housing	4132.32	0.0446	0.3808	0.1621	2.4300e-003		0.0308	0.0308		0.0308	0.0308		486.1556	486.1556	9.3200e-003	8.9100e-003	489.1143
Total		**0.0446**	**0.3808**	**0.1621**	**2.4300e-003**		**0.0308**	**0.0308**		**0.0308**	**0.0308**		**486.1556**	**486.1556**	**9.3200e-003**	**8.9100e-003**	**489.1143**

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	lb/day										lb/day					
Unmitigated	85.2073	1.1733	106.2918	0.0400		14.3275	14.3275		14.3271	14.3271	1,499.6735	636.9630	2,136.6365	1.3919	0.1180	2,202.4342

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	lb/day										lb/day					
Consumer Products	1.7334					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	82.6413	1.1212	101.8052	0.0398		14.3030	14.3030		14.3026	14.3026	1,499.6735	628.9412	2,128.6146	1.3840	0.1180	2,194.2454
Landscaping	0.1383	0.0521	4.4866	2.4000e-004		0.0245	0.0245		0.0245	0.0245		8.0218	8.0218	7.9500e-003		8.1888
Architectural Coating	0.6943					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**85.2073**	**1.1733**	**106.2918**	**0.0400**		**14.3275**	**14.3275**		**14.3271**	**14.3271**	**1,499.6735**	**636.9630**	**2,136.6365**	**1.3919**	**0.1180**	**2,202.4342**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Vegetation

Copperleaf Subdivision, San Juan Bautista

San Benito County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	54.00	Dwelling Unit	12.60	81,000.00	154

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	50
Climate Zone	4			**Operational Year**	2018
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	429.64	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Using current verified PG&E rate.

Land Use - Lot acreage and sf from construction data request spreadsheet

Construction Phase - Anticipated construction schedule provided by project applicant.

Off-road Equipment - Proposed equipment list provided by project applicant

Off-road Equipment - Proposed equipment list provided by project applicant

Off-road Equipment - Proposed equipment list provided by project applicant

Off-road Equipment - Proposed equipment list provided by project applicant

Off-road Equipment - Proposed equipment list provided by project applicant

Off-road Equipment - Proposed equipment list provided by project applicant

Trips and VMT - Bldg Constr: 180 one-way trips @50 mi RT. Paving: 4,500 CY @ 16 CY/truck = 564 one-way trips.

Vehicle Trips - Trip generation from project traffic report

Energy Use - 2013 Title 24 standards 25% more energy-efficient than 2008 standards.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	328.00
tblConstructionPhase	NumDays	300.00	391.00
tblConstructionPhase	NumDays	30.00	15.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	10.00	5.00
tblConstructionPhase	PhaseEndDate	1/2/2019	9/1/2017
tblConstructionPhase	PhaseEndDate	10/3/2017	9/30/2017
tblConstructionPhase	PhaseEndDate	2/26/2016	3/1/2016
tblConstructionPhase	PhaseEndDate	3/22/2016	3/21/2016
tblConstructionPhase	PhaseStartDate	10/1/2017	6/1/2016
tblConstructionPhase	PhaseStartDate	4/5/2016	4/1/2016
tblConstructionPhase	PhaseStartDate	2/6/2016	2/10/2016
tblConstructionPhase	PhaseStartDate	3/2/2016	3/1/2016
tblEnergyUse	LightingElect	1,608.84	1,206.63
tblEnergyUse	T24E	368.61	276.46
tblEnergyUse	T24NG	29,406.10	22,054.58
tblLandUse	LandUseSquareFeet	97,200.00	81,000.00
tblLandUse	LotAcreage	17.53	12.60
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	3.30

tblOffRoadEquipment	UsageHours	7.00	1.50
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	1.50
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	7.00	1.50
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	429.64
tblProjectCharacteristics	OperationalYear	2014	2018
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripNumber	0.00	564.00
tblTripsAndVMT	HaulingTripNumber	0.00	180.00
tblVehicleTrips	ST_TR	10.08	9.37
tblVehicleTrips	SU_TR	8.77	8.16
tblVehicleTrips	WD_TR	9.57	8.87

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

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	lb/day										lb/day					

2016	10.1348	96.4726	66.2351	0.0829	13.7157	4.9416	17.2826	7.4921	4.5463	9.9511	0.0000	8,502.8226	8,502.8226	2.4516	0.0000	8,554.3058
2017	9.8993	15.9857	15.2929	0.0233	0.3472	1.0826	1.4298	0.0927	1.0558	1.1485	0.0000	2,200.5450	2,200.5450	0.3169	0.0000	2,207.1998
Total	**20.0342**	**112.4583**	**81.5279**	**0.1062**	**14.0629**	**6.0242**	**18.7124**	**7.5847**	**5.6021**	**11.0996**	**0.0000**	**10,703.3676**	**10,703.3676**	**2.7685**	**0.0000**	**10,761.5055**

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	lb/day										lb/day					
Area	85.2073	1.1733	106.2918	0.0400		14.3275	14.3275		14.3271	14.3271	1,499.6735	636.9630	2,136.6365	1.3919	0.1180	2,202.4342
Energy	0.0446	0.3808	0.1621	2.4300e-003		0.0308	0.0308		0.0308	0.0308		486.1556	486.1556	9.3200e-003	8.9100e-003	489.1143
Mobile	3.9688	15.3204	62.2349	0.0776	4.1178	0.2051	4.3229	1.1042	0.1888	1.2929		6,833.9180	6,833.9180	0.2021		6,838.1629
Total	**89.2207**	**16.8745**	**168.6887**	**0.1200**	**4.1178**	**14.5634**	**18.6812**	**1.1042**	**14.5466**	**15.6508**	**1,499.6735**	**7,957.0366**	**9,456.7100**	**1.6034**	**0.1269**	**9,529.7113**

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	2/1/2016	2/5/2016	5	5	
2	Grading	Grading	2/10/2016	3/1/2016	5	15	
3	Trenching	Trenching	3/1/2016	3/21/2016	5	15	
4	Paving	Paving	3/22/2016	4/4/2016	5	10	
5	Building Construction	Building Construction	4/1/2016	9/30/2017	5	391	
6	Architectural Coating	Architectural Coating	6/1/2016	9/1/2017	5	328	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 39.38

Acres of Paving: 0

Residential Indoor: 164,025; Residential Outdoor: 54,675; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating –

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	6.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Grading	Excavators	2	6.00	162	0.38
Grading	Graders	3	6.00	174	0.41
Grading	Rubber Tired Dozers	2	6.00	255	0.40
Grading	Scrapers	2	6.00	361	0.48
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Trenching	Excavators	2	6.00	162	0.38
Trenching	Tractors/Loaders/Backhoes	3	6.00	97	0.37
Paving	Pavers	1	8.00	125	0.42
Paving	Paving Equipment	2	6.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	2	4.00	97	0.37
Building Construction	Air Compressors	5	3.20	78	0.48
Building Construction	Cranes	2	1.50	226	0.29
Building Construction	Forklifts	3	1.50	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	2	1.50	97	0.37
Building Construction	Welders	0	8.00	46	0.45
Architectural Coating	Aerial Lifts	2	3.30	62	0.31
Architectural Coating	Air Compressors	3	3.30	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
Site Preparation	5	13.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	11	28.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	5	13.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	564.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	12	19.00	6.00	180.00	16.80	6.60	25.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	5	4.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2016

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	lb/day										lb/day					
Fugitive Dust					13.5497	0.0000	13.5497	7.4480	0.0000	7.4480			0.0000			0.0000
Off-Road	3.2969	36.0916	27.2100	0.0246		1.8281	1.8281		1.6818	1.6818		2,563.2380	2,563.2380	0.7732		2,579.4745
Total	**3.2969**	**36.0916**	**27.2100**	**0.0246**	**13.5497**	**1.8281**	**15.3778**	**7.4480**	**1.6818**	**9.1298**		**2,563.2380**	**2,563.2380**	**0.7732**		**2,579.4745**

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	lb/day											lb/day				
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
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
Worker	0.0675	0.1329	1.1275	1.8100e-003	0.1661	1.1900e-003	0.1672	0.0440	1.0900e-003	0.0451		149.5798	149.5798	9.2300e-003		149.7737
Total	**0.0675**	**0.1329**	**1.1275**	**1.8100e-003**	**0.1661**	**1.1900e-003**	**0.1672**	**0.0440**	**1.0900e-003**	**0.0451**		**149.5798**	**149.5798**	**9.2300e-003**		**149.7737**

3.3 Grading - 2016

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	lb/day										lb/day					
Fugitive Dust					11.8173	0.0000	11.8173	5.2660	0.0000	5.2660			0.0000			0.0000
Off-Road	7.3164	82.0832	52.1080	0.0623		4.0469	4.0469		3.7232	3.7232		6,477.9200	6,477.9200	1.9540		6,518.9533
Total	**7.3164**	**82.0832**	**52.1080**	**0.0623**	**11.8173**	**4.0469**	**15.8642**	**5.2660**	**3.7232**	**8.9891**		**6,477.9200**	**6,477.9200**	**1.9540**		**6,518.9533**

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	lb/day										lb/day					
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
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

Worker	0.1453	0.2863	2.4285	3.8900e-003	0.3577	2.5700e-003	0.3602	0.0948	2.3400e-003	0.0972		322.1719	322.1719	0.0199		322.5895
Total	**0.1453**	**0.2863**	**2.4285**	**3.8900e-003**	**0.3577**	**2.5700e-003**	**0.3602**	**0.0948**	**2.3400e-003**	**0.0972**		**322.1719**	**322.1719**	**0.0199**		**322.5895**

3.4 Trenching - 2016

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	lb/day										lb/day					
Off-Road	1.3486	13.9701	10.5710	0.0150		0.8909	0.8909		0.8197	0.8197		1,553.1510	1,553.1510	0.4685		1,562.9892
Total	**1.3486**	**13.9701**	**10.5710**	**0.0150**		**0.8909**	**0.8909**		**0.8197**	**0.8197**		**1,553.1510**	**1,553.1510**	**0.4685**		**1,562.9892**

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	lb/day										lb/day					
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
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
Worker	0.0675	0.1329	1.1275	1.8100e-003	0.1661	1.1900e-003	0.1672	0.0440	1.0900e-003	0.0451		149.5798	149.5798	9.2300e-003		149.7737
Total	**0.0675**	**0.1329**	**1.1275**	**1.8100e-003**	**0.1661**	**1.1900e-003**	**0.1672**	**0.0440**	**1.0900e-003**	**0.0451**		**149.5798**	**149.5798**	**9.2300e-003**		**149.7737**

3.5 Paving - 2016

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	lb/day										lb/day					
Off-Road	1.8757	19.3444	13.1065	0.0189		1.1988	1.1988		1.1029	1.1029		1,962.6856	1,962.6856	0.5920		1,975.1179
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.8757**	**19.3444**	**13.1065**	**0.0189**		**1.1988**	**1.1988**		**1.1029**	**1.1029**		**1,962.6856**	**1,962.6856**	**0.5920**		**1,975.1179**

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	lb/day										lb/day					
Hauling	1.7745	15.3389	29.3291	0.0425	0.9846	0.2380	1.2226	0.2697	0.2189	0.4887		4,255.1032	4,255.1032	0.0315		4,255.7637
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
Worker	0.0934	0.1841	1.5612	2.5000e-003	0.2299	1.6500e-003	0.2316	0.0610	1.5100e-003	0.0625		207.1105	207.1105	0.0128		207.3790
Total	**1.8679**	**15.5229**	**30.8903**	**0.0450**	**1.2145**	**0.2396**	**1.4542**	**0.3307**	**0.2204**	**0.5511**		**4,462.2137**	**4,462.2137**	**0.0442**		**4,463.1427**

3.6 Building Construction - 2016

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	lb/day										lb/day					
Off-Road	1.5080	11.8447	7.7583	0.0121		0.8553	0.8553		0.8289	0.8289		1,181.0262	1,181.0262	0.2183		1,185.6113
Total	**1.5080**	**11.8447**	**7.7583**	**0.0121**		**0.8553**	**0.8553**		**0.8289**	**0.8289**		**1,181.0262**	**1,181.0262**	**0.2183**		**1,185.6113**

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	lb/day										lb/day					
Hauling	0.0157	0.1537	0.2458	4.3000e-004	0.0176	2.4200e-003	0.0200	4.6100e-003	2.2300e-003	6.8400e-003		43.2269	43.2269	3.1000e-004		43.2335
Vendor	0.1113	0.5592	1.8399	1.3000e-003	0.0357	9.1300e-003	0.0448	0.0101	8.3900e-003	0.0185		127.7961	127.7961	1.1100e-003		127.8194
Worker	0.0986	0.1943	1.6479	2.6400e-003	0.2427	1.7400e-003	0.2444	0.0644	1.5900e-003	0.0660		218.6166	218.6166	0.0135		218.9000
Total	**0.2257**	**0.9071**	**3.7336**	**4.3700e-003**	**0.2960**	**0.0133**	**0.3093**	**0.0791**	**0.0122**	**0.0913**		**389.6396**	**389.6396**	**0.0149**		**389.9530**

3.6 Building Construction - 2017

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	lb/day										lb/day					
Off-Road	1.3666	10.8804	7.6155	0.0121		0.7614	0.7614		0.7375	0.7375		1,174.2350	1,174.2350	0.2091		1,178.6254

Total	**1.3666**	**10.8804**	**7.6155**	**0.0121**		**0.7614**	**0.7614**		**0.7375**	**0.7375**		**1,174.2350**	**1,174.2350**	**0.2091**		**1,178.6254**

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	lb/day										lb/day					
Hauling	0.0147	0.1338	0.2327	4.3000e-004	0.0177	2.0700e-003	0.0198	4.6300e-003	1.9000e-003	6.5300e-003		42.4813	42.4813	2.9000e-004		42.4875
Vendor	0.1029	0.4967	1.7315	1.2900e-003	0.0357	7.7500e-003	0.0434	0.0101	7.1200e-003	0.0173		125.7068	125.7068	1.0400e-003		125.7286
Worker	0.0832	0.1722	1.4377	2.6400e-003	0.2427	1.6500e-003	0.2443	0.0644	1.5100e-003	0.0659		210.1281	210.1281	0.0122		210.3843
Total	**0.2008**	**0.8027**	**3.4019**	**4.3600e-003**	**0.2961**	**0.0115**	**0.3075**	**0.0791**	**0.0105**	**0.0897**		**378.3162**	**378.3162**	**0.0135**		**378.6004**

3.7 Architectural Coating - 2016

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	lb/day										lb/day					
Archit. Coating	7.7262					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.6543	4.6755	4.0037	6.2700e-003		0.3557	0.3557		0.3532	0.3532		605.9567	605.9567	0.0975		608.0032
Total	**8.3804**	**4.6755**	**4.0037**	**6.2700e-003**		**0.3557**	**0.3557**		**0.3532**	**0.3532**		**605.9567**	**605.9567**	**0.0975**		**608.0032**

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	lb/day										lb/day					
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
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
Worker	0.0208	0.0409	0.3469	5.6000e-004	0.0511	3.7000e-004	0.0515	0.0136	3.3000e-004	0.0139		46.0246	46.0246	2.8400e-003		46.0842
Total	**0.0208**	**0.0409**	**0.3469**	**5.6000e-004**	**0.0511**	**3.7000e-004**	**0.0515**	**0.0136**	**3.3000e-004**	**0.0139**		**46.0246**	**46.0246**	**2.8400e-003**		**46.0842**

3.7 Architectural Coating - 2017

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	lb/day										lb/day					
Archit. Coating	7.7262					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.5882	4.2663	3.9728	6.2700e-003		0.3093	0.3093		0.3075	0.3075		603.7562	603.7562	0.0917		605.6826
Total	**8.3144**	**4.2663**	**3.9728**	**6.2700e-003**		**0.3093**	**0.3093**		**0.3075**	**0.3075**		**603.7562**	**603.7562**	**0.0917**		**605.6826**

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	lb/day											lb/day				
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
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
Worker	0.0175	0.0363	0.3027	5.6000e-004	0.0511	3.5000e-004	0.0514	0.0136	3.2000e-004	0.0139		44.2375	44.2375	2.5700e-003		44.2914
Total	**0.0175**	**0.0363**	**0.3027**	**5.6000e-004**	**0.0511**	**3.5000e-004**	**0.0514**	**0.0136**	**3.2000e-004**	**0.0139**		**44.2375**	**44.2375**	**2.5700e-003**		**44.2914**

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	lb/day										lb/day					
Unmitigated	3.9688	15.3204	62.2349	0.0776	4.1178	0.2051	4.3229	1.1042	0.1888	1.2929		6,833.9180	6,833.9180	0.2021		6,838.1629

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	478.98	505.98	440.64	1,799,487	1,799,487
Total	478.98	505.98	440.64	1,799,487	1,799,487

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
Single Family Housing	16.80	7.10	7.90	44.00	18.80	37.20	86	11	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.351872	0.035683	0.185942	0.163546	0.059093	0.008748	0.012741	0.167664	0.001409	0.001215	0.008676	0.000530	0.002883

5.0 Energy Detail

4.4 Fleet Mix

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	lb/day										lb/day					
NaturalGas Unmitigated	0.0446	0.3808	0.1621	2.4300e-003		0.0308	0.0308		0.0308	0.0308		486.1556	486.1556	9.3200e-003	8.9100e-003	489.1143

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	lb/day										lb/day					
Single Family Housing	4132.32	0.0446	0.3808	0.1621	2.4300e-003		0.0308	0.0308		0.0308	0.0308		486.1556	486.1556	9.3200e-003	8.9100e-003	489.1143
Total		**0.0446**	**0.3808**	**0.1621**	**2.4300e-003**		**0.0308**	**0.0308**		**0.0308**	**0.0308**		**486.1556**	**486.1556**	**9.3200e-003**	**8.9100e-003**	**489.1143**

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	lb/day										lb/day					
Unmitigated	85.2073	1.1733	106.2918	0.0400		14.3275	14.3275		14.3271	14.3271	1,499.6735	636.9630	2,136.6365	1.3919	0.1180	2,202.4342

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	lb/day										lb/day					
Consumer Products	1.7334					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	82.6413	1.1212	101.8052	0.0398		14.3030	14.3030		14.3026	14.3026	1,499.6735	628.9412	2,128.6146	1.3840	0.1180	2,194.2454
Landscaping	0.1383	0.0521	4.4866	2.4000e-004		0.0245	0.0245		0.0245	0.0245		8.0218	8.0218	7.9500e-003		8.1888
Architectural Coating	0.6943					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**85.2073**	**1.1733**	**106.2918**	**0.0400**		**14.3275**	**14.3275**		**14.3271**	**14.3271**	**1,499.6735**	**636.9630**	**2,136.6365**	**1.3919**	**0.1180**	**2,202.4342**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Vegetation

Attachment 2: SR-156 Traffic Emissions and Risk Calculations

Copperleaf Subdivision - San Juan Bautista, CA
State Route 156
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = 2018

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	Average Speed (mph)	Diesel ADT	Average Vehicles per Hour
EB-SR156	Eastbound SR-156	E	1	1288	32	9.7	3.0	55	1,146	47.7
WB-SR156	Westbound SR-156	W	1	1288	32	9.7	3.0	55	1,146	47.7

2018 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - EB & WB SR-156 and WB-SR156

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	3.62%	41	0.0791	9	6.47%	74	0.0776	17	5.57%	64	0.0783
2	1.99%	23	0.0707	10	7.32%	84	0.0787	18	2.90%	33	0.0687
3	2.16%	25	0.0671	11	6.51%	75	0.0780	19	2.34%	27	0.0680
4	3.80%	44	0.0834	12	6.95%	80	0.0783	20	1.07%	12	0.0583
5	2.18%	25	0.0789	13	6.33%	73	0.0788	21	2.85%	33	0.0800
6	3.68%	42	0.0843	14	6.24%	71	0.0782	22	3.97%	45	0.0821
7	6.79%	78	0.0810	15	5.25%	60	0.0783	23	2.14%	25	0.0778
8	5.15%	59	0.0785	16	3.80%	44	0.0756	24	0.93%	11	0.0767
								Total		1,146	

Copperleaf Subdivision - San Juan Bautista, CA
State Route 156
PM2.5 & TOG Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2018

Group Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	ADT	Average Speed (mph)
EB-SR156	Eastbound SR-156	E	1	1288	32	9.7	0.5	12,443	55
WB-SR156	Westbound SR-156	W	1	1288	32	9.7	0.5	12,443	55

2018 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - EB & WB SR-156

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.29%	160	0.0431	9	7.14%	889	0.0296	17	7.23%	900	0.0259
2	0.48%	59	0.0488	10	4.61%	573	0.0358	18	7.87%	980	0.0238
3	0.47%	58	0.0524	11	4.77%	593	0.0319	19	5.49%	683	0.0234
4	0.49%	61	0.0880	12	5.98%	745	0.0311	20	4.09%	509	0.0226
5	0.59%	73	0.0499	13	6.14%	764	0.0284	21	3.23%	402	0.0272
6	1.11%	138	0.0540	14	6.05%	753	0.0290	22	3.33%	415	0.0299
7	3.99%	496	0.0347	15	6.91%	860	0.0266	23	2.42%	301	0.0268
8	7.58%	943	0.0250	16	6.93%	863	0.0247	24	1.80%	224	0.0234
								Total		12,443	

Copperleaf Subdivision - San Juan Bautista, CA
State Route 156
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = 2020

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	Average Speed (mph)	Diesel ADT	Average Vehicles per Hour
EB & WB SR156	Eastbound SR-156	E	1	1288	32	9.7	3.0	55	1,170	48.8
WB-SR156	Westbound SR-156	W	1	1288	32	9.7	3.0	55	1,170	48.8

2020 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - EB & WB SR156 and WB-SR156

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	3.58%	42	0.0716	9	6.58%	77	0.0693	17	5.78%	68	0.0697
2	1.98%	23	0.0639	10	7.07%	83	0.0740	18	3.08%	36	0.0602
3	2.15%	25	0.0606	11	6.13%	72	0.0736	19	2.45%	29	0.0587
4	3.76%	44	0.0756	12	7.15%	84	0.0699	20	0.75%	9	0.0695
5	2.16%	25	0.0714	13	6.39%	75	0.0701	21	2.89%	34	0.0726
6	3.71%	43	0.0764	14	6.37%	75	0.0696	22	4.00%	47	0.0744
7	6.47%	76	0.0764	15	5.32%	62	0.0694	23	2.17%	25	0.0713
8	5.22%	61	0.0696	16	3.97%	46	0.0666	24	0.89%	10	0.0710
								Total		1,170	

Copperleaf Subdivision - San Juan Bautista, CA
State Route 156
PM2.5 & TOG Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2020

Group Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	ADT	Average Speed (mph)	Average Vehicles per Hour
EB & WB	Eastbound SR-156	E	1	1288	32	9.7	0.5	12,680	55	528
WB-SR156	Westbound SR-156	W	1	1288	32	9.7	0.5	12,680	55	528

2020 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - EB & WB SR156

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.29%	163	0.0416	9	7.14%	906	0.0288	17	7.24%	918	0.0253
2	0.48%	61	0.0472	10	4.61%	585	0.0346	18	7.88%	999	0.0234
3	0.47%	60	0.0506	11	4.77%	605	0.0309	19	5.49%	696	0.0230
4	0.49%	62	0.0832	12	5.98%	759	0.0302	20	4.09%	518	0.0222
5	0.59%	75	0.0473	13	6.14%	778	0.0277	21	3.22%	409	0.0265
6	1.11%	141	0.0516	14	6.04%	766	0.0283	22	3.33%	422	0.0290
7	3.98%	505	0.0334	15	6.91%	876	0.0261	23	2.42%	307	0.0263
8	7.58%	961	0.0245	16	6.93%	879	0.0243	24	1.80%	228	0.0230
								Total		12,680	

Copperleaf Subdivision - San Juan Bautista, CA
State Route 156
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = 2025

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	Average Speed (mph)	Diesel ADT	Average Vehicles per Hour
EB-SR156	Eastbound SR-156	E	1	1288	32	9.7	3.0	55	1,232	51.4
WB-SR156	Westbound SR-156	W	1	1288	32	9.7	3.0	55	1,232	51.4

2025 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - EB & WB SR156 and WB-SR156

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	3.56%	44	0.0636	9	6.52%	80	0.0622	17	5.70%	70	0.0629
2	2.04%	25	0.0567	10	7.34%	90	0.0639	18	2.97%	37	0.0542
3	2.11%	26	0.0537	11	6.47%	80	0.0633	19	2.23%	27	0.0555
4	3.69%	45	0.0669	12	6.98%	86	0.0637	20	0.98%	12	0.0484
5	2.07%	26	0.0632	13	6.28%	77	0.0641	21	2.99%	37	0.0622
6	3.68%	45	0.0681	14	6.20%	76	0.0636	22	4.09%	50	0.0645
7	6.61%	81	0.0669	15	5.34%	66	0.0625	23	2.27%	28	0.0603
8	5.02%	62	0.0625	16	3.93%	48	0.0602	24	0.93%	11	0.0554
								Total		1,232	

Copperleaf Subdivision - San Juan Bautista, CA
State Route 156
PM2.5 & TOG Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2025

Group Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	ADT	Average Speed (mph)	Average Vehicles per Hour
EB & WB	Eastbound SR-156	E	1	1288	32	9.7	0.5	13,272	55	553
WB-SR156	Westbound SR-156	W	1	1288	32	9.7	0.5	13,272	55	553

2025 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - EB & WB SR156

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.28%	170	0.0396	9	7.16%	951	0.0282	17	7.24%	961	0.0248
2	0.48%	64	0.0449	10	4.63%	614	0.0336	18	7.87%	1045	0.0229
3	0.46%	61	0.0473	11	4.77%	633	0.0300	19	5.48%	728	0.0227
4	0.48%	63	0.0775	12	6.01%	797	0.0295	20	4.09%	543	0.0220
5	0.58%	77	0.0442	13	6.14%	815	0.0270	21	3.23%	428	0.0260
6	1.11%	147	0.0488	14	6.04%	802	0.0275	22	3.33%	442	0.0281
7	3.98%	528	0.0321	15	6.91%	917	0.0254	23	2.43%	322	0.0259
8	7.58%	1006	0.0240	16	6.93%	920	0.0238	24	1.79%	237	0.0224
								Total		13,272	

Copperleaf Subdivision - San Juan Bautista, CA
State Route 156 Traffic Data and PM2.5 & TOG Emission Factors - 55 mph

Analysis Year = ***2018***

Vehicle Type	2013 Caltrans Number Vehicles (veh/day)	2018 Number Vehicles (veh/day)	2018 Percent Diesel	Number Diesel Vehicles (veh/day)	Vehicle Speed (mph)	Emission Factors: Diesel Vehicles DPM (g/VMT)	All Vehicles: Total PM2.5 (g/VMT)	All Vehicles: Exhaust PM2.5 (g/VMT)	Gas Vehicles: Exhaust TOG (g/VMT)	Gas Vehicles: Running TOG (g/VMT)
LDA	13,227	13,889	0.73%	101	55	0.0140	0.0191	0.0013	0.0312	0.040
LDT	7,107	7,463	0.07%	5	55	0.0231	0.0194	0.0016	0.0581	0.087
MDT	1,063	1,117	10.86%	121	55	0.0240	0.0225	0.0027	0.0767	0.128
HDT	2,302	2,417	85.40%	2,064	55	0.0843	0.1162	0.0742	0.1947	0.126
Total	23,700	24,885	-	2,292	55	-	-		-	-
Mix Avg Emission Factor						**0.07788**	**0.02875**	**0.00856**	**0.04464**	**0.06094**
Increase From 2013		1.05								
Vehicles/Direction		12,443		1,146						
Avg Vehicles/Hour/Direction		**518**		**48**						

Traffic Data Year = ***2013***

Caltrans 2013 Truck AADT Data	Total	Total Truck	Truck by Axle 2	3	4	5
SR156 A Alameda St, San Juan Bautis	23,700	3,365	1,063	273	172	1,858
			31.60%	8.10%	5.10%	55.20%
Percent of Total Vehicles		14.20%	4.49%	1.15%	0.72%	7.84%

Traffic Increase per Year (%) = ***1.00%***

Copperleaf Subdivision - San Juan Bautista, CA
State Route 156 Traffic Data and PM2.5 & TOG Emission Factors - 55 mph

Analysis Year = ***2020***

Vehicle Type	2013 Caltrans Number Vehicles (veh/day)	2020 Number Vehicles (veh/day)	2020 Percent Diesel	Number Diesel Vehicles (veh/day)	Vehicle Speed (mph)	Emission Factors: Diesel Vehicles DPM (g/VMT)	All Vehicles: Total PM2.5 (g/VMT)	All Vehicles: Exhaust PM2.5 (g/VMT)	Gas Vehicles: Exhaust TOG (g/VMT)	Gas Vehicles: Running TOG (g/VMT)
LDA	13,218	14,143	0.73%	103	55	0.0110	0.0190	0.0013	0.0245	0.036
LDT	7,117	7,615	0.07%	5	55	0.0189	0.0193	0.0015	0.0438	0.077
MDT	1,063	1,138	10.84%	123	55	0.0217	0.0223	0.0025	0.0647	0.123
HDT	2,302	2,463	85.62%	2,109	55	0.0765	0.1093	0.0675	0.1527	0.110
Total	23,700	25,359	-	2,340	55	-	-		-	-
Mix Avg Emission Factor						**0.07057**	**0.02802**	**0.00785**	**0.03462**	**0.05435**
Increase From 2013		1.07								
Vehicles/Direction		12,680		1,170						
Avg Vehicles/Hour/Direction		**528**		**49**						

Copperleaf Subdivision - San Juan Bautista, CA
State Route 156 Traffic Data and PM2.5 & TOG Emission Factors - 55 mph

Analysis Year = ***2025***

Vehicle Type	2013 Caltrans Number Vehicles (veh/day)	2025 Number Vehicles (veh/day)	2025 Percent Diesel	Number Diesel Vehicles (veh/day)	Vehicle Speed (mph)	Emission Factors: Diesel Vehicles DPM (g/VMT)	All Vehicles: Total PM2.5 (g/VMT)	All Vehicles: Exhaust PM2.5 (g/VMT)	Gas Vehicles: Exhaust TOG (g/VMT)	Gas Vehicles: Running TOG (g/VMT)
LDA	13,260	14,852	0.72%	106	55	0.0067	0.0191	0.0013	0.0182	0.029
LDT	7,074	7,923	0.07%	5	55	0.0128	0.0192	0.0014	0.0299	0.065
MDT	1,063	1,191	10.88%	130	55	0.0172	0.0220	0.0022	0.0423	0.112
HDT	2,302	2,578	86.25%	2,224	55	0.0681	0.1019	0.0604	0.0916	0.079
Total	23,700	26,544	-	2,465	55	-	-		-	-
Mix Avg Emission Factor						**0.06264**	**0.02729**	**0.00714**	**0.02418**	**0.04524**
Increase From 2013		1.12								
Vehicles/Direction		13,272		1,232						
Avg Vehicles/Hour/Direction		**553**		**51**						

CAL3QHCR Risk Modeling Parameters and Maximum DPM Cancer Risk at Project Site
Copperleaf Subdivision - San Juan Bautista, CA

Receptor Information

Number of Receptors	185
Receptor Height =	1.8 m
Receptor distances =	15 m (49.2 ft)

Meteorological Conditions

Hollister Met Data	1995
Land Use Classification	Suburban
Wind speed =	variable
Wind direction =	variable

Cancer Risk Calculation Method

Inhalation Dose = C_{air} x DBR x A x EF x ED x 10^{-6} / AT

Where: C_{air} = concentration in air (µg/m^3)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
ED = Exposure duration (years)
AT = Averaging time period over which exposure is averaged.
10^{-6} = Conversion factor

Inhalation Dose Factors

Exposure Type	Value[1]							
	DBR (L/kg BW-day)	A (-)	Exposure (hr/day)	Exposure (days/week)	Exposure (week/year)	EF (days/yr)	ED (Years)	AT (days)
Residential (70-Year)	302	1	24	7	50	350	70	25,550

[1] Default values recommended by OEHHA& Bay Area Air Quality Management District

Cancer Risk (per million) = Inhalation Dose x CPF x 10^6
= URF x Cair

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
URF =Unit risk factor (cancer risk per µg/m^3)

Unit Risk Factor for DPM (risk per million per µg/m3)

Exposure Type	DPM CPF $(mg/kg\text{-}day)^{-1}$	DPM URF
Residential (70-Yr Exposure)	1.10E+00	318.5

MEI Cancer Risk Calculations - Receptor Height = 1.5 m

Meteorological Data Years	Maximum DPM Concentration (µg/m^3)		
	2018	2020	2025
1995	0.0404	0.0374	0.0350
Cancer Risk[a]	12.87	11.91	11.13
Number of Years of Exposure	2	5	63
Contribution to Total Cancer Risk	0.37	0.9	10.0
70-yr Cumulative Risk[b]	11.24		

Notes:
Receptor Heights = 1.5 m
Maximum DPM concentrations occur in the northwest portion of the property closest to State Route 156
a Cancer risk (per million) calculated assuming constant 70-year exposure to concentration for year of analysis.
b Cumulative cancer risk (per million) calculated assuming variable exposure over a 70-year period due to decreased concentrations over time.