

100 AND 200 W CARIBBEAN CAMPUS PROJECT - AIR QUALITY AND GREENHOUSE GAS EMISSIONS ASSESSMENT

Sunnyvale, California

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Prepared for:

Kurt M. Soenen, P.E.
Principal Engineer
Cornerstone Earth Group
1259 Oakmead Parkway
Sunnyvale, CA 94085

Prepared by:

James A. Reyff

ILLINGWORTH & RODKIN, INC.
 Acoustics • Air Quality 
429 E. Cotati Avenue
Cotati, CA 94931
(707) 794-0400

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EXECUTIVE SUMMARY

The proposed project would demolish existing light industrial and office uses to construct an office campus that includes 1,041,890 square feet of office space and amenities in Sunnyvale, CA ("City"). Air quality and greenhouse gas (GHG) emission impacts were evaluated in this report. The CalEEMod and EMFAC models were used to predict emissions of reactive organic gases (ROG) and nitrogen oxides (NOx), which are precursor pollutants to ground level ozone, and emissions of particulate matter (i.e., PM₁₀ and PM_{2.5}). In addition, GHG emissions were also computed.

This project incorporates a *Construction Emissions Management Plan*, use of which will ensure the project's construction emissions are not significant. Development of the project would be consistent with land use and traffic assumptions in the City's Land Use and Transportation Element (LUTE) of its General Plan, which the City adopted in 2017. The Draft Environmental Impact Report (DEIR) for the LUTE identified mitigation measures to reduce emissions of air pollutants and GHG from both construction and operation of future projects, which are incorporated into the *Construction Emissions Management Plan*, as applicable. The *Construction Emissions Management Plan* also incorporates applicable policies, strategies, and measures from the Sunnyvale Climate Action Plan (CAP), which aims to reduce future GHG emissions, including emissions from anticipated new development and is intended to be implemented in the City. As detailed in this report, the *Construction Emissions Management Plan* also includes standard Best Management Practices for construction emissions recommended in the 2017 *BAAQMD CEQA Air Quality Guidelines*. Collectively, the measures in the *Construction Emissions Management Plan* ensure that the project's construction emissions would not be significant.

Operational emissions of air pollutants and their precursors were evaluated by computing the net increase between the proposed project and the existing uses that were assumed to continue operation. These emissions were found to be less than significant. Greenhouse gas emissions were evaluated based on the predicted emissions and considering the number of new workers, as well as consistency with the CAP. The project's per capita emissions¹ of greenhouse gases are considered less than significant for two reasons: (1) the project is subject to the City's CAP, under which City-wide emissions are substantially reduced, and (2) project emissions are predicted to be below current service population thresholds and projected 2030 thresholds that are intended to be consistent with State plans to meet 2030 GHG emission reduction goals. The project includes several features that support the City's CAP in reducing long-term GHG emissions. These include implementation of an aggressive Transportation Demand Program, construction of energy efficient buildings and infrastructure that include solar photovoltaic panels to generate renewable energy.

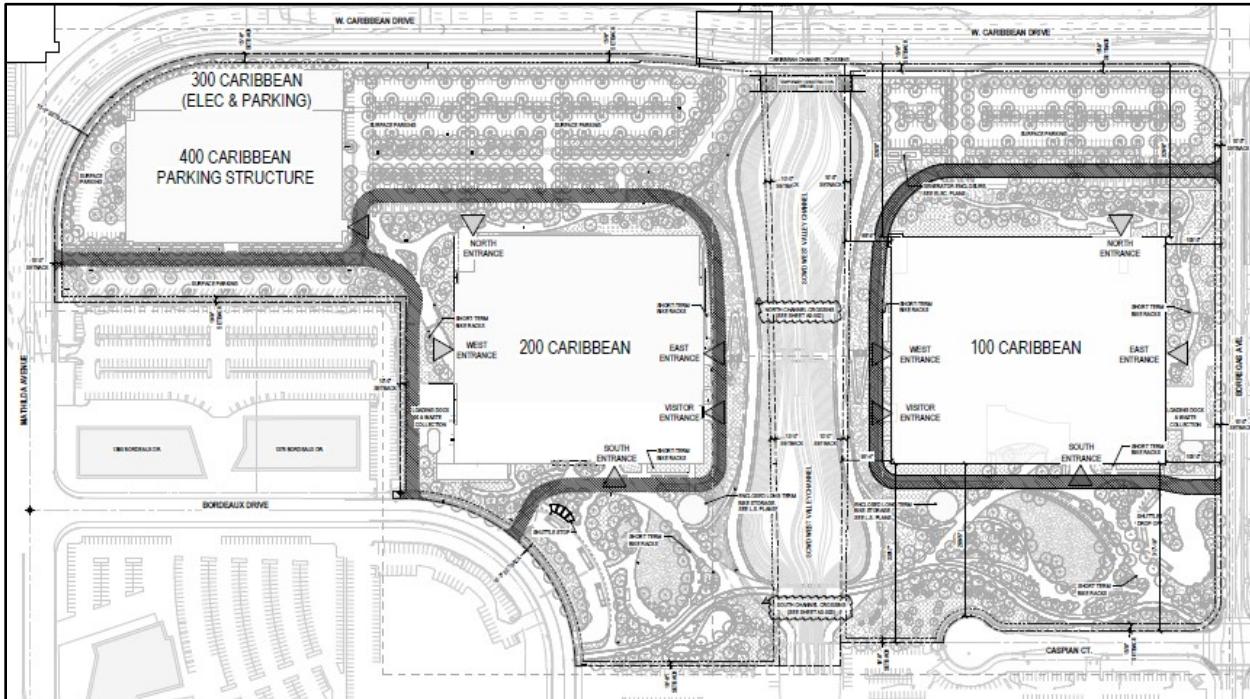
INTRODUCTION

This report examines air quality and greenhouse gas (GHG) emissions associated with the proposed 100 and 200 W. Caribbean Campus Project, which is the redevelopment of a 40.5-acre site for two new 5-story R&D office buildings totaling 1,041,890 square feet including a 4-level parking structure. The existing 710,381 square feet of office and manufacturing buildings (i.e., 10

¹ Per capita emissions are computed by dividing annual project emissions by the number of workers.

buildings) will be demolished. Figure 1 shows the project site plan. This report summarizes applicable air quality and GHG regulations, and the analysis of potential air quality and GHG impacts.

Figure 1. Project Site Plans



CONSTRUCTION EMISSIONS MANAGEMENT PLAN

The project includes a *Construction Emissions Management Plan* that reduces construction period emissions. It incorporates policies and measures from the City's CAP, the Mitigation Measures analyzed and adopted in the LUTE DEIR, and standard construction Best Management Practices, which together provide feasible measures that ensure that the project's emissions are minimized. This plan also includes all *Basic Measures* and *Enhanced Measures* recommended in the 2017 BAAQMD CEQA Air Quality Guidelines, as well as measures to reduce exhaust emissions from project construction equipment and haul trucks. The plan measures are as follows:

A. Basic Measures

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

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

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

B. Enhanced Control Measures

Applicable enhanced measures include:

1. All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph and visible dust clouds cannot be confined to the site;
2. Site accesses to a distance of 100 feet from the paved road shall be treated with a 6 to 12-inch compacted layer of wood chips, mulch, or gravel;
3. Sandbags or other erosion control measures shall be installed to prevent silt runoff to public roadways from sites with a slope greater than one percent;
4. Minimizing the idling time of diesel-powered construction equipment to two minutes; and
5. The project shall develop a plan demonstrating that the combination of off-road equipment and on-road vehicle traffic that is part of the construction project (i.e.,

owned, leased, and subcontractor vehicles) would achieve a project wide 32-percent NOx reduction compared to the CalEEMod modeled average used in this report. There are several options available to meet this requirement. Acceptable options for reducing emissions include the use of late model engines and trucks, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or other options as such become available. The following are feasible methods:

- i. All diesel construction equipment used at the site for more than two continuous days or 20 hours total shall meet U.S. EPA emission standards for Tier 4 engines, where not feasible, engines must meet Tier 3 standards. A plan showing that equipment usage, based on total horsepower hours will include at a minimum 80 percent Tier 4 equipment.
- ii. Provide line power to the site during the early phases of construction to minimize the use of diesel-powered stationary equipment, such as generators, air compressors and welders. Where access to alternative sources of power are available, portable diesel engines shall be prohibited.
- iii. Diesel engines, whether for off-road equipment or on-road vehicles, shall not be left idling for more than 2 minutes, except as provided in exceptions to the applicable state regulations (e.g., traffic conditions, safe operating conditions). The construction sites shall have posted legible and visible signs in designated queuing areas and at the construction site to clearly notify operators of idling limit.
- iv. All on-road heavy-duty diesel trucks with a gross vehicle weight rating of 33,000 pounds or greater (EMFAC Category HDDT) used at the project site (such as haul trucks, water trucks, dump trucks, and concrete trucks) be model year 2010 or newer.

SETTING

Air Pollutants

Ozone

Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and oxides of nitrogen (NOx). The main sources of ROG and NOx, often referred to as ozone precursors, are combustion processes (including combustion in motor vehicle engines) and the evaporation of solvents, paints, and fuels. In the Bay Area, 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.

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

NO₂ is a reddish-brown gas that is a byproduct of combustion processes. Automobiles and industrial operations are the main sources of NO₂. Aside from its contribution to ozone formation, NO₂ also contribute to other pollution problems, including a high concentration of fine particulate matter, poor visibility, and acid deposition. NO₂ may be visible as a coloring component on high pollution days, especially in conjunction with high ozone levels. NO₂ decreases lung function and may reduce resistance to infection.

Sulfur Dioxide

Sulfur dioxide (SO₂) is a colorless, irritating gas formed primarily from incomplete combustion of fuels containing sulfur. Industrial facilities also contribute to gaseous SO₂ levels in the region. SO₂ irritates the respiratory tract, can injure lung tissue when combined with fine particulate matter, and reduces visibility and the level of sunlight. This pollutant would be emitted at negligible levels by the project and was not considered in the impact analysis.

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 (PM₁₀). 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 PM₁₀ 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.

Lead

Lead is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of the phase-out of leaded gasoline, metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufactures. The phase out and eventual banning of the use of leaded gasoline in on-road vehicles in 1995 have caused lead levels in the air decreased dramatically. This pollutant would not be emitted by the project.

Toxic Air Contaminants (TACs)

In addition to the criteria pollutants discussed above, Toxic Air Contaminants (TACs) are another group of pollutants of concern. TACs are injurious in small quantities and are regulated by the EPA and the California Air Resources Board (CARB). Some examples of TACs include: benzene, butadiene, formaldehyde, and hydrogen sulfide. The identification, regulation, and monitoring of TACs is relatively recent compared to that for criteria pollutants.

High volume freeways, stationary diesel engines, and facilities attracting heavy and constant diesel vehicle traffic (distribution centers, truck stops) were identified as posing the highest risk to adjacent receptors. Other facilities associated with increased risk include warehouse distribution centers, large retail or industrial facilities, high volume transit centers, or schools with a high volume of bus traffic. Health risks from TACs are a function of both concentration and duration of exposure.

Sensitive Receptors

Some groups of people are more affected by air pollution than others. The State has identified the following people 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 are over 3,000 feet from the project site.

Regional Air Quality

The project site is in the San Francisco Bay Area Air Basin. The Air Basin includes the counties of San Francisco, Santa Clara, San Mateo, Marin, Napa, Contra Costa, and Alameda, along with the southeast portion of Sonoma County and the southwest portion of Solano County.

The project site is within the jurisdiction of the BAAQMD. Air quality conditions in the San Francisco Bay Area have improved significantly since the BAAQMD was created in 1955. Ambient concentrations of air pollutants, and the number of days during which the region exceeds

air quality standards, have fallen dramatically. Exceedances of air quality standards occur primarily during meteorological conditions conducive to high pollution levels, such as cold, windless winter nights or hot, sunny summer afternoons.

Local Climate and Air Quality

Air quality is a function of both local climate and local sources of air pollution. Air quality is the balance of the natural dispersal capacity of the atmosphere and emissions of air pollutants from human uses of the environment. Climate and topography are major influences on air quality.

Climate and Meteorology

During the summer, mostly clear skies result in warm daytime temperatures and cool nights in the Santa Clara Valley. Winter temperatures are mild, except for very cool but generally frost-less mornings. Further inland where the moderating effect of the bay is not as strong, temperature extremes are greater. Wind patterns are influenced by local terrain, with a northwesterly sea breeze typically developing during the daytime. Winds are usually stronger in the spring and summer. Rainfall amounts are modest, ranging from 13 inches in the lowlands to 20 inches in the hills.

Air Pollution Potential

Ozone and fine particle pollution, or PM_{2.5}, are the major regional air pollutants of concern in the San Francisco Bay Area. Ozone is primarily a problem in the summer, and fine particle pollution in the winter. Most of Santa Clara County is well south of the cooler waters of the San Francisco Bay and far from the cooler marine air which usually reaches across San Mateo County in summer. Ozone frequently forms on hot summer days when the prevailing seasonal northerly winds carry ozone precursors southward across the county, causing health standards to be exceeded. Santa Clara County experiences many exceedances of the PM_{2.5} standard each winter. This is due to the high population density, wood smoke, industrial and freeway traffic, and poor wintertime air circulation caused by extensive hills to the east and west that block wind flow into the region.

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 (CO₂), primarily a byproduct of fuel combustion;
- Nitrous oxide (N₂O), a byproduct of fuel combustion; also associated with agricultural operations such as the fertilization of crops;
- Methane (CH₄), 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
- Perfluorocarbons (PFCs) and sulfur hexafluoride (SF₆) 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 CO₂. Accordingly, GHG emissions are typically measured and reported in terms of equivalent CO₂ (CO₂e). For instance, SF₆ is 22,800 times more intense in terms of global climate change contribution than CO₂.

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

The California Greenhouse Gas Emission Inventory – 2017 Edition (released June 6, 2017) indicates that total California emissions in 2015 were 440.4 MMT of CO₂e². Approximately 37 percent of these emissions were associated with transportation (i.e., all sectors), followed by the Industrial sector at 21 percent and the Electric Power sector at 19 percent. The statewide inventory was estimated to have peaked in 2004. The current 2015 inventory is estimated to represent an overall decrease of 10 percent from 2004 levels.

² See https://www.arb.ca.gov/cc/inventory/pubs/reports/2000_2015/ghg_inventory_trends_00-15.pdf accessed June 8, 2017

REGULATORY FRAMEWORK

Pursuant to the federal Clean Air Act (CAA) of 1970, the U.S. Environmental Protection Agency (EPA) established national ambient air quality standards (NAAQS). The NAAQS were established for major pollutants, termed “criteria” pollutants. Criteria pollutants are defined as those pollutants for which the Federal and State governments have established ambient air quality standards, or criteria, for outdoor concentrations in order to protect public health.

Both the EPA and the California Air Resources Board (CARB) have established ambient air quality standards for common pollutants: carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead (Pb), and suspended particulate matter (PM). In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles. These standards are designed to protect the health and welfare of the public with a reasonable margin of safety. These ambient air quality standards are levels of contaminants which represent safe levels that avoid specific adverse health effects associated with each criteria pollutant. Health effects of criteria pollutants and their potential sources are described below and summarized in Table 1.

Federal Air Quality Regulations

At the federal level, the EPA has been charged with implementing national air quality programs. EPA’s air quality mandates are drawn primarily from the Federal Clean Air Act (FCAA), which was enacted in 1963. The FCAA was amended in 1970, 1977, and 1990.

The FCAA required EPA to establish primary and secondary NAAQS and required each state to prepare an air quality control plan referred to as a State Implement Plan (SIP). Federal standards include both primary and secondary standards. Primary standards set limits to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.³ The Federal Clean Air Act Amendments of 1990 (FCAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. EPA has responsibility to review all state SIPs to determine conformity with the mandates of the FCAA and determine if implementation will achieve air quality goals.

³ U.S. Environmental Protection Agency, 2013. Website: www.epa.gov/air/criteria.html. February.

TABLE 1 Health Effects of Air Pollutants

Pollutants	Sources	Primary Effects
Carbon Monoxide (CO)	<ul style="list-style-type: none">Incomplete combustion of fuels and other carbon-containing substances, such as motor exhaust.Natural events, such as decomposition of organic matter.	<ul style="list-style-type: none">Chest pain in patients with heart diseaseHeadacheLight-headednessReduced mental alertness
Nitrogen Dioxide (NO ₂)	<ul style="list-style-type: none">Motor vehicle exhaust.High temperature stationary combustion.Atmospheric reactions.	<ul style="list-style-type: none">Aggravation of respiratory illness.Reduced visibility.Reduced plant growth.Formation of acid rain.
Ozone (O ₃)	<ul style="list-style-type: none">Atmospheric reaction of organic gases with nitrogen oxides in sunlight.	<ul style="list-style-type: none">Respiratory symptomsWorsening of lung disease leading to premature deathDamage to lung tissueCrop, forest and ecosystem damageDamage to a variety of materials, including rubber, plastics, fabrics, paint and metals
Lead (Pb)	<ul style="list-style-type: none">Contaminated soil.	<ul style="list-style-type: none">Impaired mental functioning in childrenLearning disabilities in childrenBrain and kidney damage
Suspended Particulate Matter (PM _{2.5} and PM ₁₀)	<ul style="list-style-type: none">Stationary combustion of solid fuels.Construction activities.Industrial processes.Atmospheric chemical reactions.	<ul style="list-style-type: none">Premature deathHospitalization for worsening of cardiovascular diseaseHospitalization for respiratory diseaseAsthma-related emergency room visits,Increased symptoms, increased inhaler usage
Sulfur Dioxide (SO ₂)	<ul style="list-style-type: none">Combustion of sulfur-containing fossil fuels.Smelting of sulfur-bearing metal ores.Industrial processes.	<ul style="list-style-type: none">Worsening of asthma: increased symptoms, increased medication usage, and emergency room visits
Toxic Air Contaminants	<ul style="list-style-type: none">Cars and trucks, especially diesels.Industrial sources such as chrome platers.Neighborhood businesses such as dry cleaners and service stations.Building materials and product.	<ul style="list-style-type: none">Cancer.Chronic eye, lung, or skin irritation.Neurological and reproductive disorders.

Source: CARB, 2018: <https://ww2.arb.ca.gov/resources/common-air-pollutants>, accessed 5/18/2018.

The 1970 FCAA authorized the establishment of national health-based air quality standards and also set deadlines for their attainment. The FCAA Amendments of 1990 changed deadlines for attaining NAAQS as well as the remedial actions required of areas of the nation that exceed the standards. Under the FCAA, State and local agencies in areas that exceed the NAAQS are required to develop SIPs to show how they will achieve the NAAQS by specific dates. The FCAA requires that projects receiving federal funds demonstrate conformity to the approved SIP and local air quality attainment plan for the region. Conformity with the SIP requirements would satisfy the FCAA requirements.

State Air Quality Regulations

The CARB is the agency responsible for the coordination and oversight of State and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA), adopted in 1988. The CCAA requires that all air districts in the State achieve and maintain the California Ambient Air Quality Standards (CAAQS) by the earliest practical date. The CCAA specifies that districts should focus on reducing the emissions from transportation and air-wide emission sources, and provides districts with the authority to regulate indirect sources.

CARB is also responsible for developing and implementing air pollution control plans to achieve and maintain the NAAQS. CARB is primarily responsible for statewide pollution sources and produces a major part of the SIP. Local air districts provide additional strategies for sources under their jurisdiction. CARB combines this data and submits the completed SIP to the EPA.

Other CARB duties include monitoring air quality (in conjunction with air monitoring networks maintained by air pollution control and air quality management districts), establishing CAAQS (which in many cases are more stringent than the NAAQS), determining and updating area designations and maps, and setting emissions standards for new mobile sources, consumer products, small utility engines, and off-road vehicles.

Attainment Status Designations

The CARB is required to designate areas of the State as attainment, nonattainment, or unclassified for all State standards. An “attainment” designation for an area signifies that pollutant concentrations did not violate the standard for that pollutant in that area. A “nonattainment” designation indicates that a pollutant concentration violated the standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria. An “unclassified” designation signifies that data does not support either an attainment or nonattainment status. The CCAA divides districts into moderate, serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

Table 2 shows the State and Federal standards for criteria pollutants and provides a summary of the attainment status for the San Francisco Bay Area with respect to National and State ambient air quality standards.

TABLE 2 San Francisco Bay Area Attainment Status

Pollutant	Averaging Time	California Standards		National Standards	
		Concentration	Attainment Status	Concentration	Attainment Status
Carbon Monoxide (CO)	8-Hour	9 ppm (10 mg/m ³)	Attainment	9 ppm (10 mg/m ³)	Attainment
	1-Hour	20 ppm (23 mg/m ³)	Attainment	35 ppm (40 mg/m ³)	Attainment
Nitrogen Dioxide (NO ₂)	Annual Mean	0.030 ppm (57 mg/m ³)	Attainment	0.053 ppm (100 µg/m ³)	Attainment
	1-Hour	0.18 ppm (338 µg/m ³)	Attainment	0.100 ppm	Unclassified
Ozone (O ₃)	8-Hour	0.07 ppm (137 µg/m ³)	Nonattainment	0.070 ppm	Nonattainment
	1-Hour	0.09 ppm (180 µg/m ³)	Nonattainment	Not Applicable	Not Applicable
Suspended Particulate Matter (PM ₁₀)	Annual Mean	20 µg/m ³	Nonattainment	Not Applicable	Not Applicable
	24-Hour	50 µg/m ³	Nonattainment	150 µg/m ³	Unclassified
Suspended Particulate Matter (PM _{2.5})	Annual Mean	12 µg/m ³	Nonattainment	12 µg/m ³	Attainment
	24-Hour	Not Applicable	Not Applicable	35 µg/m ³	Nonattainment
Sulfur Dioxide (SO ₂)	Annual Mean	Not Applicable	Not Applicable	80 µg/m ³ (0.03 ppm)	Attainment
	24-Hour	0.04 ppm (105 µg/m ³)	Attainment	365 µg/m ³ (0.14 ppm)	Attainment
	1-Hour	0.25 ppm (655 µg/m ³)	Attainment	0.075 ppm (196 µg/m ³)	Attainment

Lead (Pb) is not listed in the above table because it has been in attainment since the 1980s.

ppm = parts per million

mg/m³ = milligrams per cubic meter

µg/m³ = micrograms per cubic meter

Source: Bay Area Air Quality Management District, 2018: <http://www.baaqmd.gov/research-and-data/air-quality-standards-and-attainment-status>, accessed 5/9/2018 .

California Clean Air Act

In 1988, the CCAA required that all air districts in the State endeavor to achieve and maintain CAAQS for carbon monoxide (CO), ozone (O₃), sulfur dioxide (SO₂) and nitrogen dioxide (NO₂) by the earliest practical date. The CCAA provides districts with authority to regulate indirect sources and mandates that air quality districts focus particular attention on reducing emissions from transportation and area-wide emission sources. Each nonattainment district is required to adopt a plan to achieve a 5 percent annual reduction, averaged over consecutive 3-year periods, in district-wide emissions of each nonattainment pollutant or its precursors. A Clean Air Plan shows how a district would reduce emissions to achieve air quality standards. Generally, the State standards for these pollutants are more stringent than the national standards.

California Air Resources Board Handbook

In 1998, CARB identified particulate matter from diesel-fueled engines as a toxic air contaminant. CARB has completed a risk management process that identified potential cancer risks for a range of activities using diesel-fueled engines.⁴ CARB subsequently developed an Air Quality and Land Use Handbook⁵ (Handbook) in 2005 that is intended to serve as a general reference guide for evaluating and reducing air pollution impacts associated with new projects that go through the land use decision-making process. The CARB Handbook recommends that planning agencies consider proximity to air pollution sources when considering new locations for “sensitive” land uses, such as residences, medical facilities, daycare centers, schools, and playgrounds.

Air pollution sources of concern include freeways, rail yards, ports, refineries, distribution centers, chrome plating facilities, dry cleaners, and large gasoline service stations. Key recommendations in the Handbook relative to the Plan Area include taking steps to consider or avoid siting new, sensitive land uses:

- Within 500 feet of a freeway, urban roads with 100,000 vehicles/day or rural roads with 50,000 vehicles/day.
- Within 300 feet of gasoline fueling stations.
- Within 300 feet of dry cleaning operations (note that dry cleaning with TACs is being phased out and will be prohibited in 2023).

Bay Area Air Quality Management District (BAAQMD)

The BAAQMD seeks to attain and maintain air quality conditions in the San Francisco Bay Area Air Basin (SFBAAB) through a comprehensive program of planning, regulation, enforcement, technical innovation, and education. The clean air strategy includes the preparation of plans for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations, and issuance of permits for stationary sources. The BAAQMD also inspects stationary sources and responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements programs and regulations required by law.

BAAQMD Regulatory Requirements

The combustion equipment associated with the proposed project that includes new diesel engines to power generators and possibly new natural gas-fired boilers would establish new sources of particulate matter and gaseous emissions. Emissions would primarily result from the testing of the emergency backup generators, operation of the boilers for space and water heating and some minor emissions from cooling towers. The project would also generate emissions from vehicles traveling to and from the project.

⁴ California Air Resources Board, 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*. October.

⁵ California Air Resources Board, 2005. *Air Quality and Land Use Handbook: A Community Health Perspective*. April.

Certain emission sources would be subject to BAAQMD Regulations and Rules. The District's rules and regulations that may apply to the project include:

- Regulation 2 – Permits
 - Rule 2-1: General Requirements
 - Rule 2-2: New Source Review
- Regulation 6 – Particulate Matter and Visible Emissions
- Regulation 9 – Inorganic Gaseous Pollutants
 - Rule 9-1 : Sulfur Dioxide
 - Rule 9-7: Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional, and Commercial Boilers, Steam Generators, And Process Heaters
 - Rule 9-8: Nitrogen Oxides and Carbon Monoxide from Stationary Internal Combustion Engines

Permits – Rule 2-1-301 requires that any person installing, modifying, or replacing any equipment, the use of which may reduce or control the emission of air contaminants, shall first obtain an authority to construct (ATC).

Rule 2-1-302 requires that written authorization from the BAAQMD in the form of a permit to operate (PTO) be secured before any such equipment is used or operated.

Rule 2-1 lists sources that are exempt from permitting. At the proposed facility, the diesel fuel storage tanks are expected to be exempt from permitting.

New Source Review - Rule 2-2, New Source Review (NSR), applies to all new and modified sources or facilities that are subject to the requirements of Rule 2-1-301. The purpose of the rule is to provide for review of such sources and to provide mechanisms by which no net increase in emissions will result.

Rule 2-2-301 requires that an applicant for an Authority to Construct (ATC) or Permit to Operate (PTO) apply best available control technology (BACT) to any new or modified source that results in an increase in emissions and has emissions of precursor organic compounds, non-precursor organic compounds, NOx, SO₂, PM₁₀, or CO of 10.0 pounds or more per highest day. Based on the estimated emissions from the proposed project, BACT will be required for NOx emissions from the diesel-fueled generator engines.

BACT for Diesel Generator Engines – Since the generators will be used exclusively for emergency use during involuntary loss of power, the BACT 2 levels listed for IC compression engines in the BAAQMD BACT Guidelines would apply. The BACT 2 NOx emission factor limit is 6.9 grams per horsepower hour (g/hp-hr). The project's proposed engines will have emissions lower than the BACT 2 level and, as such, will comply with the BACT requirements.

Offsets - Rule 2-2-302 require that offsets be provided for a new or modified source that emits more than 10 tons per year of NOx or precursor organic compounds. It is not expected that

emissions of any pollutant will exceed the offset thresholds. Thus, is not expected that offsets for the proposed project would be required.

Prohibitory Rules - Regulation 6 pertains to particulate matter and visible emissions. Although the engines will be fueled with diesel, they will be modern, low emission engines. Thus, the engines are expected to comply with Regulation 6.

Rule 9-1 applies to sulfur dioxide. The engines will use ultra-low sulfur diesel fuel (less than 15 ppm sulfur) and will not be a significant source of sulfur dioxide emissions and are expected to comply with the requirements of Rule 9-1.

Rule 9-7 limits the emissions of NOx CO from industrial, institutional and commercial boilers, steam generators and process heaters. This regulation typically applies to boilers with a heat rating of 2 million British Thermal Units (BTU) per hour

Rule 9-8 prescribes NOx and CO emission limits for stationary internal combustion engines. Since the proposed engines will be used with emergency standby generators, Regulation 9-8-110 exempts the engines from the requirements of this Rule, except for the recordkeeping requirements (9-8-530) and limitations on hours of operation for reliability-related operation (maintenance and testing). The engines will not operate more than 50 hours per year, which will satisfy the requirements of 9-8-111.

Stationary Diesel Airborne Toxic Control Measure (ACTM) – The BAAQMD administers the State’s ACTM for Stationary Diesel engines (section 93115, title 17 CA Code of Regulations). The project’s engines will be new stationary emergency standby diesel engines larger than 50 hp. Since the engines will have an uncontrolled PM emission factor of less than 0.15 g/hp-hr and operate no more than 50 hours per year, the engines will comply with the requirements of the ACTM.

Clean Air Plan

The BAAQMD is responsible for developing a Clean Air Plan which guides the region’s air quality planning efforts to attain the CAAQS. The BAAQMD’s 2017 Clean Air Plan is the latest Clean Air Plan which contains district-wide control measures to reduce ozone precursor emissions (i.e., ROG and NOx), particulate matter and greenhouse gas emissions. The Bay Area 2017 Clean Air Plan, which was adopted on April 19, 2017 by the BAAQMD’s board of directors:

- Updates the Bay Area 2010 Clean Air Plan in accordance with the requirements of the California Clean Air Act to implement “all feasible measures” to reduce ozone;
- Provides a control strategy to reduce ozone, particulate matter (PM), air toxics, and greenhouse gases in a single, integrated plan;
- Reviews progress in improving air quality in recent years; and
- Continues and updates emission control measures.

BAAQMD CARE Program

The Community Air Risk Evaluation (CARE) program was initiated in 2004 to evaluate and reduce health risks associated with exposures to outdoor TACs in the Bay Area. The program examines TAC emissions from point sources, area sources and on-road and off-road mobile sources with an emphasis on diesel exhaust, which is a major contributor to airborne health risk in California. The CARE program is an on-going program that encourages community involvement and input. The technical analysis portion of the CARE program is being implemented in three phases that includes an assessment of the sources of TAC emissions, modeling and measurement programs to estimate concentrations of TAC, and an assessment of exposures and health risks. Throughout the program, information derived from the technical analyses will be used to focus emission reduction measures in areas with high TAC exposures and high density of sensitive populations. Risk reduction activities associated with the CARE program are focused on the most at-risk communities in the Bay Area. The BAAQMD has identified six communities as impacted: Concord, Richmond/San Pablo, Western Alameda County, San Jose, Redwood City/East Palo Alto, and Eastern San Francisco.

Planning Healthy Places

BAAQMD developed a guidebook that provides air quality and public health information intended to assist local governments in addressing potential air quality issues related to exposure of sensitive receptors to exposure of emissions from local sources of air pollutants. The guidance provides tools and recommended best practices that can be implemented to reduce exposures. The information is provided as recommendations to develop policies and implementing measures in city or county General Plans, neighborhood or specific plans, land use development ordinances, or into projects.

Odors

Odor impacts are subjective in nature and are generally regarded as an annoyance rather than a health hazard. The ability to detect and react to odors varies considerably among people. A strong or unfamiliar odor is more easily detected and are more likely to cause complaints. BAAQMD responds to odor complaints from the public and considers a source to have a substantial number of odor complaints if the complaint history includes five or more confirmed complaints per year averaged over a 3-year period. Facilities that are regulated by CalRecycle (e.g. landfill, composting, etc.) are required to have Odor Impact Minimization Plans in place.

BAAQMD California Environmental Quality Act (CEQA) Air Quality Guidelines

The BAAQMD *CEQA Air Quality Guidelines*⁶ were prepared to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area. The guidelines provide recommended procedures for evaluating potential air impacts during the environmental review process consistent with CEQA requirements including thresholds of significance, mitigation measures, and background air quality information. They also include assessment methodologies

⁶ Bay Area Air Quality Management District, 2017. *CEQA Air Quality Guidelines*. May. See http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en

for air toxics, odors, and greenhouse gas emissions. In June 2010, the BAAQMD's Board of Directors adopted CEQA thresholds of significance and an update of their *CEQA Guidelines*. In May 2011, the updated BAAQMD *CEQA Air Quality Guidelines* were amended to include a risk and hazards threshold for new receptors and modify procedures for assessing impacts related to risk and hazard impacts.

BAAQMD's adoption of significance thresholds contained in the 2011 CEQA Air Quality Guidelines was called into question by an order issued March 5, 2012, in California Building Industry Association (CBIA) v. BAAQMD (Alameda Superior Court Case No. RGI0548693). The order requires BAAQMD to set aside its approval of the thresholds until it has conducted environmental review under CEQA. The ruling made in the case concerned the environmental impacts of adopting the thresholds and how the thresholds would indirectly affect land use development patterns. In August 2013, the Appellate Court struck down the lower court's order to set aside the thresholds. However, the California Supreme Court accepted a portion of CBIA's petition to review the appellate court's decision to uphold BAAQMD's adoption of the thresholds. The specific portion of the argument considered was whether CEQA requires consideration of the effects of the environment on a project (as contrasted to the effects of a proposed project on the environment). On December 17, 2015, the California Supreme Court ruled that CEQA generally does not require an analysis of the effects of existing environmental conditions (e.g., air quality) on a project unless the project would exacerbate those conditions somehow through its construction and/or operation. In response to the legal issues, BAAQMD revised their CEQA Guidelines in May 2017. These guidelines were used to prepare this analysis.

Local Plans and Policies

City of Sunnyvale General Plan

The following air quality goals and policies contained in the City's General Plan⁷ are applicable to the proposed project:

Goal EM-11 Improved Air Quality: Improve Sunnyvale's Air Quality and Reduce the Exposure of its Citizens to Air Pollutants.

- *Policy EM-11.1:* The City should actively participate in regional air quality planning. Future development within Sunnyvale impacts regional air quality. Indirect impacts are related to vehicle trips attracted to or generated by residential, commercial or employment-generating land uses. There are several methods in which land use regulations can be used to both reduce emissions and alleviate the impact on residences. By locating employment and retail services areas closer to residential areas, vehicle use can be reduced.
- *Policy EM-11.2:* Utilize land use strategies to reduce air quality impact, including opportunities for citizens to live and work in close proximity.

⁷ City of Sunnyvale, 2011. *Sunnyvale General Plan*.

- *Policy EM-11.3:* Require all new development to utilize site planning to protect citizens from unnecessary exposure to air pollutants.
- *Policy EM-11.4:* Apply the indirect source rule to new development with significant air quality impacts. Indirect source review would cover commercial and residential projects as well as other land uses that produce or attract motor vehicle traffic.

City of Sunnyvale Land Use and Transportation Element

In 2017, Sunnyvale adopted an update to the City's Land Use and Transportation Element (LUTE) of its General Plan. The LUTE combined the long-range planning requirements of both land use and circulation elements into one chapter of the General Plan. An environmental impact report for the LUTE evaluated the environmental impacts associated with development of the City based on the land use and transportation elements established in the LUTE. Air quality and greenhouse gas emissions associated with construction and operation of the LUTE were addressed in that EIR.

Much of the air quality impacts associated with this project were addressed under the *LUTE Draft EIR*⁸. Projects constructed in Sunnyvale are subject to the mitigation measures contained in the LUTE DEIR. Impacts and mitigation measures pertaining to the proposed DEIR were identified. This included project-specific impacts. The focus of this air quality study is to address impacts associated with criteria air pollutants and toxic air contaminant (TAC) exposure associated with project construction and exposure of project occupants to TAC sources near the project site (i.e., within 1,000 feet). This air quality report incorporates the mitigation measures (MM) described in the LUTE.

The LUTE DEIR identified significant and unavoidable impacts with respect to temporary construction period emissions (Impact 3.5.3). Potentially significant impacts were also identified in regard to exposing existing and new sensitive receptors to unhealthy levels of TACs and PM_{2.5} (Impact 3.5.5 & 3.5.6).

MM 3.5.3 Violate an Air Quality Standard or Contribute Substantially to an Air Quality Violation During Short-Term Construction Activities

NEW POLICY: Prior to the issuance of grading or building permits, the City of Sunnyvale shall ensure that the BAAQMD basic construction mitigation measures from Table 8-1 of the BAAQMD 2011 CEQA Air Quality Guidelines (or subsequent updates) are noted on the construction documents.⁹

NEW POLICY: In the cases where construction projects are projected to exceed the BAAQMD's air pollutant significance thresholds for NO_x, PM₁₀, and/or PM_{2.5}, all off-road diesel-fueled equipment (e.g., rubber-tired dozers, graders, scrapers,

⁸ City of Sunnyvale. 2016. *Land Use and Transportation Element Draft Environmental Impact Report* (SCH No.2012032003). August.

⁹ Note that the BAAQMD Basic Construction Mitigation Measures Recommended for ALL Proposed Projects is listed as Table 8-2 in the BAAQMD 2017 CEQA Air Quality Guidelines.

excavators, asphalt paving equipment, cranes, tractors) shall be at least CARB Tier 3 Certified or better.

The DEIR identified potentially significant impacts associated with exposure of sensitive receptors to substantial pollutant concentrations because project may expose new sensitive receptors to significant health risks associated with TAC exposure. To address this issue, MM 3.5.6 requires future projects located within 1,000 feet of sensitive receptors to perform a construction health risk assessment:

MM 3.5.5 Exposure of Sensitive Receptors to Substantial Toxic Air Containments Concentrations During Construction

NEW POLICY: In the case when a subsequent project's construction span is greater than 5 acres and/or is scheduled to last more than two years, the subsequent project applicant shall be required to prepare a site-specific construction pollutant mitigation plan in consultation with Bay Area Air Quality Management District (BAAQMD) staff prior to the issuance of grading permits. A project-specific construction-related dispersion modeling acceptable to the BAAQMD shall be used to identify potential toxic air contaminant impacts, including diesel particulate matter. If BAAQMD risk thresholds (i.e., probability of contracting cancer is greater than 10 in one million) would be exceeded, mitigation measures shall be identified in the construction pollutant mitigation plan to address potential impacts and shall be based on site-specific information such as the distance to the nearest sensitive receptors, project site plan details, and construction schedule. The City shall ensure construction contracts include all identified measures and that the measures reduce the health risk below BAAQMD risk thresholds. Construction pollutant mitigation plan measures shall include but not be limited to:

1. Limiting the amount of acreage to be graded in a single day.
2. Restricting intensive equipment usage and intensive ground disturbance to hours outside of normal school hours
3. Notifying affected sensitive receptors one week prior to commencing onsite construction so that any necessary precautions (such as rescheduling or relocation of outdoor activities) can be implemented. The written notification shall include the name and telephone number of the individual empowered to manage construction of the project. In the event that complaints are received, the individual empowered to manage construction shall respond to the complaint within 24 hours. The response shall include identification of measures being taken by the project construction contractor to reduce construction-related air pollutants. Such a measure may include the relocation of equipment.

MM 3.5.6 Exposure of Sensitive Receptors to Substantial Toxic Air Contaminant Concentrations During Operation

NEW POLICY: The following measures shall be utilized in site planning and building designs to reduce TAC and PM_{2.5} exposure where new receptors are located within 1,000 feet of emissions sources:

- Future development that includes sensitive receptors (such as residences, schools, hospitals, daycare centers, or retirement homes) located within 1,000 feet of Caltrain, Central Expressway, El Camino Real, Lawrence Expressway, Mathilda Avenue, Sunnyvale-Saratoga Road, US 101, State Route 237, State Route 85, and/or stationary sources shall require site-specific analysis to determine the level of health risk. This analysis shall be conducted following procedures outlined by the BAAQMD. If the site-specific analysis reveals significant exposures from all sources (i.e., health risk in terms of excess cancer risk greater than 100 in one million, acute or chronic hazards with a hazard Index greater than 10, or annual PM_{2.5} exposures greater than 0.8 µg/m³) measures shall be employed to reduce the risk to below the threshold (e.g., electrostatic filtering systems or equivalent systems and location of vents away from TAC sources). If this is not possible, the sensitive receptors shall be relocated.
- Future nonresidential developments identified as a permitted stationary TAC source or projected to generate more than 100 heavy-duty truck trips daily will be evaluated through the CEQA process or BAAQMD permit process to ensure they do not cause a significant health risk in terms of excess cancer risk greater than 10 in one million, acute or chronic hazards with a hazard Index greater than 1.0, or annual PM_{2.5} exposures greater than 0.3 µg/m³ through source control measures.
- For significant cancer risk exposure, as defined by the BAAQMD, indoor air filtration systems shall be installed to effectively reduce particulate levels to avoid adverse public health impacts. Projects shall submit performance specifications and design details to demonstrate that lifetime residential exposures would not result in adverse public health impacts (less than 10 in one million chances).

Note that the project would not include new sensitive receptors and sensitive receptors are not located within 1,000 feet of the project site; therefore, construction and operation of the project would not affect sensitive receptors.

Greenhouse Gas Regulatory Framework

This section summarizes key federal, State, and City statutes, regulations, and policies that would apply to the proposed project. Global climate change resulting from GHG emissions is an emerging environmental concern being raised and discussed at the international, national, and statewide level. At each level, agencies are considering strategies to control emissions of gases that contribute to global climate change.

Federal Regulations

The United States participates in the United Nations Framework Convention on Climate Change (UNFCCC). While the United States signed the Kyoto Protocol, which would have required reductions in GHGs, Congress never ratified the protocol. The federal government chose voluntary and incentive-based programs to reduce emissions and has established programs to promote climate technology and science. At this time, there are no federal regulations or policies pertaining to GHG emissions from proposed projects or plans.

State Regulations

The State of California is concerned about GHG emissions and their effect on global climate change. The State recognizes that “there appears to be a close relationship between the concentration of GHGs in the atmosphere and global temperatures” and that “the evidence for climate change is overwhelming.” The effects of climate change on California, in terms of how it would affect the ecosystem and economy, remain uncertain. The State has many areas of concern regarding climate change with respect to global warming. According to the 2006 Climate Action Team Report, the following climate change effects and conditions can be expected in California over the course of the next century:

- A diminishing Sierra snowpack declining by 70 percent to 90 percent, effecting the state’s water supply;
- Increasing temperatures from 8 to 10.4 degrees Fahrenheit (°F) under the higher emission scenarios, leading to a 25 to 35 percent increase in the number of days ozone pollution standards are exceeded in most urban areas;
- Coastal erosion along the length of California and seawater intrusion into the Sacramento River Delta from a 4- to 33-inch rise in sea level. This would exacerbate flooding in already vulnerable regions;
- Increased vulnerability of forests due to pest infestation and increased temperatures;
- Increased challenges for the state’s important agricultural industry from water shortages, increasing temperatures, and saltwater intrusion into the Delta; and
- Increased electricity demand, particularly in the hot summer months.

Assembly Bill 1575 (1975)

In 1975, the Legislature created the California Energy Commission (CEC). The CEC regulates electricity production that is one of the major sources of GHGs.

Title 24, Part 6 of the California Code of Regulations (1978)

The Energy Efficiency Standards for Residential and Nonresidential Buildings were established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards

are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods.

Assembly Bill 1493 (2002)

Assembly Bill (AB) 1493 required CARB to develop and adopt regulations that reduce GHG emitted by passenger vehicles and light duty trucks.

State of California Executive Order S-3-05 (2005)

The Governor's Executive Order established aggressive emissions reductions goals: by 2010, GHG emissions must be reduced to 2000 levels; by 2020, GHG emissions must be reduced to 1990 levels; and by 2050, GHG emissions must be reduced to 80 percent below 1990 levels.

In June 2005, the Governor of California signed Executive Order S-3-05, which identified Cal/EPA as the lead coordinating State agency for establishing climate change emission reduction targets in California. A "Climate Action Team," a multi-agency group of State agencies, was set up to implement Executive Order S-3-05. Under this order, the State plans to reduce GHG emissions to 80 percent below 1990 levels by 2050. GHG emission reduction strategies and measures to reduce global warming were identified by the California Climate Action Team in 2006.

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

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

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

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

California enacted legislation (SB 375) to expand the efforts of AB 32 by controlling indirect GHG emissions caused by urban sprawl. SB 375 provides incentives for local governments and applicants to implement new conscientiously planned growth patterns. This includes incentives for creating attractive, walkable, and sustainable communities and revitalizing existing communities. The legislation also allows applicants to bypass certain environmental reviews under CEQA if they

build projects consistent with the new sustainable community strategies. Development of more alternative transportation options that would reduce vehicle trips and miles traveled, along with traffic congestion, would be encouraged. SB 375 enhances CARB's ability to reach the AB 32 goals by directing the agency in developing regional GHG emission reduction targets to be achieved from the transportation sector for 2020 and 2035. CARB works with the metropolitan planning organizations (e.g. Association of Bay Area Governments [ABAG] and Metropolitan Transportation Commission [MTC]) to align their regional transportation, housing, and land use plans to reduce vehicle miles traveled and demonstrate the region's ability to attain its GHG reduction targets. A similar process is used to reduce transportation emissions of ozone precursor pollutants in the Bay Area.

Executive Order S-13-08 (2008)

This Executive Order directed California agencies to assess and reduce the vulnerability of future construction projects to impacts associated with sea-level rise.

SB 350 Renewable Portfolio Standards

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

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

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

The new Scoping Plan establishes a path that will reduce GHG emissions in California to meet the 2030 target (note that the AB 32 Scoping Plan only addressed 2020 targets and a long-term goal). Key features of this plan are:

- Cap and Trade program places a firm limit on 80 percent of the State's emissions;
- Achieving a 50-percent Renewable Portfolio Standard by 2030 (currently at about 29 percent statewide);
- Increase energy efficiency in existing buildings (note that new
- Develop fuels with an 18-percent reduction in carbon intensity;
- Develop more high-density, transit oriented housing;
- Develop walkable and bikeable communities
- Greatly increase the number of electric vehicles on the road and reduce oil demand in half;

- Increase zero-emissions transit so that 100 percent of new buses are zero emissions;
- Reduce freight-related emissions by transitioning to zero emissions where feasible and near-zero emissions with renewable fuels everywhere else; and
- Reduce “super pollutants” by reducing methane and hydrofluorocarbons or HFCs by 40 percent.

In the updated Scoping Plan, CARB recommends statewide targets of no more than 6 metric tons CO₂e per capita by 2030 and no more than 2 metric tons CO₂e per capita by 2050. The statewide per capita targets account for all emissions sectors in the State, statewide population forecasts, and the statewide reductions necessary to achieve the 2030 statewide target under SB 32 and the longer-term State emissions reduction goal of 80 percent below 1990 levels by 2050.

Bay Area Air Quality Management District

BAAQMD is the regional government agency that regulates sources of air pollution within the nine San Francisco Bay Area counties. The BAAQMD regulates GHG emissions through the following plans, programs, and guidelines.

Regional Clean Air Plans

BAAQMD and other air districts prepare clean air plans in accordance with the State and Federal Clean Air Acts. The Bay Area 2010 Clean Air Plan (CAP) is a comprehensive plan to improve Bay Area air quality and protect public health through implementation of a control strategy designed to reduce emissions and ambient concentrations of harmful pollutants. The most recent CAP also includes measures designed to reduce GHG emissions.

BAAQMD Climate Protection Program

The BAAQMD established a climate protection program to reduce pollutants that contribute to global climate change and affect air quality in the San Francisco Bay Area Air Basin. The climate protection program includes measures that promote energy efficiency, reduce vehicle miles traveled, and develop alternative sources of energy, all of which assist in reducing emissions of GHG and in reducing air pollutants that affect the health of residents. BAAQMD also seeks to support current climate protection programs in the region and to stimulate additional efforts through public education and outreach, technical assistance to local governments and other interested parties, and promotion of collaborative efforts among stakeholders.

BAAQMD CEQA Air Quality Guidelines

The BAAQMD adopted revised CEQA Air Quality Guidelines on June 2, 2010 and then adopted a modified version of the Guidelines in May, 2011. The BAAQMD CEQA Air Quality Guidelines include thresholds of significance for greenhouse gas emissions. Under the latest CEQA Air Quality Guidelines, a local government may prepare a qualified greenhouse gas Reduction Strategy that is consistent with AB 32 goals. If a project is consistent with an adopted qualified greenhouse gas Reduction Strategy, it can be presumed that the project will not have significant

GHG emissions under CEQA.¹⁰ The BAAQMD also developed a quantitative threshold for project- and plan-level analyses based on estimated GHG emissions, as well as per capita metrics.

City of Sunnyvale Climate Action Plan

In 2014, the City adopted the City of Sunnyvale Climate Action Plan (CAP).¹¹ The City has a GHG reduction target of reducing GHG levels by 15 percent from 2008 levels by 2020 and progress towards 80 percent below 1990 levels by 2050. To reach their 2020 goal, the City of Sunnyvale must reduce emissions by a minimum of 237,960 MTCO_{2e} or 17 percent of total baseline emissions. This Climate Action Plan is intended to streamline future environmental review of development projects in Sunnyvale by following the BAAQMD CEQA Air Quality Guidelines for a Qualified GHG Reduction Strategy. The CAP includes a checklist that identifies the minimum criteria a project must demonstrate to use the City's CAP for purposes of streamlining the analysis of GHG emissions under CEQA. Minimum criteria outlined below includes: 1) consistency with CAP forecasts, and 2) incorporation of applicable Near-Term (prior to 2016) strategies and measures from the CAP as binding and enforceable components of the project. Any projects that exceed the 2020 forecasts may still rely on the CAP for identification of measures and standards for mitigation. However, since such projects would exceed the assumptions of the CAP forecast, the City requires that the project demonstrate anticipated project-level GHG emissions estimates using CalEEMod. An analysis of project-level GHG emissions was conducted using the BAAQMD CEQA Air Quality Guidelines. Emissions for the proposed project are discussed below and were analyzed using the methodology recommended in the BAAQMD CEQA Air Quality Guidelines.¹²

Climate Action Playbook (CAP 2.0)

The City of Sunnyvale is in the process of updating the CAP adopted May 2014. The Draft Climate Action Playbook is the City of Sunnyvale's next step to achieving carbon neutrality.¹³ This document establishes new strategies, targets, and actions to reduce fossil fuel consumption and greenhouse gas emission at a local level. By 2050, the City seeks to reduce emission by 80 percent. The Climate Action Playbook is currently in the public review process and is scheduled to be considered for adoption by the City Council this summer (in 2019), and therefore the strategies within this document are not yet applicable to this report.

City of Sunnyvale Land Use and Transportation Element

As previously discussed, the City adopted the LUTE and accompanying EIR in 2017. The LUTE is intended to implement local land use and transportation planning efforts in a manner consistent with the Metropolitan Transportation Commission's (MTC) Sustainable Communities Strategy (SCS) and Plan Bay Area, which is a regional growth strategy required under Senate Bill (SB)

¹⁰ Bay Area Air Quality Management District, 2017. *CEQA Air Quality Guidelines*. May.

¹¹ Available at: <http://www.pmcworld.com/client/sunnyvale/documents/final-ClimateActionPlan.pdf>. Accessed on June 16, 2017.

¹² BAAQMD, 2017. *Op cit.*

¹³ City of Sunnyvale, 2019. *Climate Action Playbook Public Review Draft*. March. <https://sunnyvale.ca.gov/civicax/filebank/blobdload.aspx?t=69582.16&BlobID=26319>

375. The LUTE, in combination with transportation policies and programs, strives to reduce GHG emissions. The LUTE DEIR addressed impacts associated with GHG emissions from projects built-out under the LUTE. The DEIR found that the LUTE may conflict with the Sunnyvale Climate Action Plan (CAP), as it consists of growth beyond what was utilized in the CAP. Mitigation was adopted to address this impact.

MM 3.13.1 Upon adoption of the Draft LUTE, the City will update the Climate Action Plan to include the new growth projects of the Draft LUTE and make any necessary adjustments to the CAP to ensure year 2020 and 2035 greenhouse gas emission reduction targets are attained.

PROJECT IMPACTS AND MITIGATION MEASURES

Significance Criteria

Significance Thresholds

Per Appendix G of the CEQA Guidelines and BAAQMD recommendations, air quality and GHG impacts are considered significant if implementation of the Project would¹⁴:

- 1) Conflict with or obstruct implementation of an applicable air quality plan.
- 2) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).
- 3) Violate any air quality standard or contribute substantially to an existing or projected air quality violation.
- 4) Expose sensitive receptors to substantial pollutant concentrations.
- 5) Create objectionable odors affecting a substantial number of people.
- 6) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
- 7) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

In June 2010, BAAQMD adopted thresholds of significance to assist in the review of projects under CEQA. These Thresholds were designed to establish the level at which BAAQMD believed air pollution emissions would cause significant environmental impacts under CEQA and were posted on BAAQMD's website and included in the Air District's updated CEQA Guidelines (updated May 2011). The City uses the significance thresholds recommended by BAAQMD. In response to the legal issues, BAAQMD revised their CEQA Guidelines in May 2017. The

¹⁴ Note that updates to Appendix G of the CEQA Guidelines were adopted December 28, 2018, subsequent to this analysis. The changes in the CEQA Guidelines that pertain to air quality and greenhouse gas emissions as a result of this update do not change the conclusions identified in this report, nor, the measures in the Construction Emissions Management Plan prepared for the project.

thresholds identified in Table 3 represent the most recent guidance provided by BAAQMD that are used by the City of Sunnyvale.

TABLE 3 Air Quality Significance Thresholds

Criteria Air Pollutant	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (lbs./day)	Average Daily Emissions (lbs./day)	Annual Average Emissions (tons/year)
ROG	54	54	10
NO _x	54	54	10
PM ₁₀	82 (Exhaust)	82	15
PM _{2.5}	54 (Exhaust)	54	10
CO	Not Applicable	9.0 ppm (8-hour average) or 20.0 ppm (1-hour average)	
Fugitive Dust	Construction Dust Ordinance or other Best Management Practices	Not Applicable	
Health Risks and Hazards	Single Sources Within 1,000-foot Zone of Influence	Combined Sources (Cumulative from all sources within 1,000-foot zone of influence)	
Excess Cancer Risk	>10 per one million	>100 per one million	
Hazard Index	>1.0	>10.0	
Incremental annual PM _{2.5}	>0.3 µg/m ³	>0.8 µg/m ³	
Odors	Complaints	Complaints	
	No threshold	5 confirmed complaints per year averaged over three years	

Note: ROG = reactive organic gases, NOx = nitrogen oxides, PM₁₀ = coarse particulate matter or particulates with an aerodynamic diameter of 10 micrometers (µm) or less, PM_{2.5} = fine particulate matter or particulates with an aerodynamic diameter of 2.5µm or less.

Impact: Conflict with or obstruct implementation of an applicable air quality plan.

BAAQMD is the regional agency responsible for overseeing compliance with State and Federal laws, regulations, and programs within the San Francisco Bay Area Air Basin (SFBAAB). BAAQMD, with assistance from ABAG and MTC, has prepared and implements specific plans to meet the applicable laws, regulations, and programs. The most recent and comprehensive of which is the *Bay Area 2017 Clean Air Plan*.¹⁵ This is the update to the *Bay Area 2010 Clean Air Plan*. BAAQMD's CEQA guidelines assist lead agencies in evaluating the significance of air quality

¹⁵ Bay Area Air Quality Management District (BAAQMD), 2017. *Final 2017 Clean Air Plan*.. This is an update to the *Bay Area 2010 Clean Air Plan*

impacts. In formulating compliance strategies, BAAQMD relies on planned land uses established by local general plans. Land use planning can affect vehicle travel, which in turn affects region-wide emissions of air pollutants and GHGs. The effect of land use changes and implementation of control measures consistent with the Clean Air Plan is addressed under the *BAAQMD CEQA Air Quality Guidelines* for Plan impacts. Plan impacts were addressed for the LUTE, where the LUTE land uses plans and transportation circulation was determined not to conflict with the applicable Clean Air Plan. Because development of land uses contemplated and permitted in the LUTE would not conflict with the applicable Clean Air Plan, the impact was considered *less-than-significant*, and no mitigation measures were identified.

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

The Bay Area is considered a non-attainment area for ground-level ozone and PM_{2.5} under both the Federal Clean Air Act and the California Clean Air Act. The area is also considered non-attainment for PM₁₀ under the California Clean Air Act, but not the federal act. The area has attained both State and federal ambient air quality standards for carbon monoxide. As part of an effort to attain and maintain ambient air quality standards for ozone, PM_{2.5} and PM₁₀, the BAAQMD has established thresholds of significance for these air pollutants and their precursors. These thresholds are for ozone precursor pollutants (ROG and NOx), PM₁₀, and PM_{2.5} and apply to both construction period and operational period impacts.

Emissions Modeling

The California Emissions Estimator Model (CalEEMod) Version 2016.3.2 was used to estimate emissions from construction and operation of the site assuming full build-out of the project. The project land use types and size, and anticipated construction schedule were input to CalEEMod. For construction impacts, separate modeling was conducted for the 100 Caribbean, 200 Caribbean and Construction Parking/Office areas. Operational emissions were modeled separately for two runs that included existing uses and the proposed project.

Construction Period Emissions

Equipment Emissions

CalEEMod was used to provide emission estimates for on-site construction activities. On-site activities are primarily made up of construction equipment emissions, while off-site activity includes worker, hauling, and vendor traffic. The proposed project land uses were input into CalEEMod for three different input files, which are described in Table 4.

A construction build-out scenario, including equipment list and schedule by phase, was provided by the project applicant. The schedule was provided by phase including the estimated start and end

dates along with the phase duration in days. Equipment usage was provided by phase that included the type and quantity of each piece of equipment along with the number of days during the phase it would operate and the average hours per operating day. The total number of hours was divided by the number of days in the phase to calculate the number of hours per day that was entered in CalEEMod. Traffic generated by construction, which included worker trips, vendor deliveries and material hauling were computed separately using the CARB EMFAC2017 model (discussed below). All other construction inputs were based on the CalEEMod model.

The construction emission computations with CalEEMod assume that construction begins in early 2019. This reflected the most aggressive construction schedule. Construction activities that occur in the timeframe beyond what the modeling reflects would likely be lower because emissions rates from construction equipment and traffic are lower due to improved emissions in newer equipment. Newer vehicles and construction equipment are assumed in the CalEEMod model for future years. The emissions presented in this analysis, are therefore, assumed to be an overestimate.

Construction Traffic Emissions

Construction would produce traffic in the form of worker trips and truck traffic. The traffic-related emissions are based on worker and vendor trip estimates produced by CalEEMod and haul trip that were computed based on the estimate of demolition material to be exported, soil material to be imported and the estimate of cement truck trips. CalEEMod provides daily estimates of worker and vendor trips for each applicable phase. The total trips for those were computed by multiplying the daily rate by the number of days in that phase. Haul trips for demolition were estimated from the provided demolition tonnage by assuming each truck could carry 10 tons per load. Truck trips for the provided quantity of imported of soil to the site were estimated based on a truck capacity of 15 tons per truckload. Note soil would be imported for the Site Preparation and Green Roof construction activities. The number of cement truckloads were provided with the construction information.

TABLE 4 Summary of CalEEMod Construction Model Runs

CalEEMod Run/Land Uses	Size	Units	Building Floor Area (sf)
Run: 18-072 100 Caribbean Construction			
-Area Size = 18.20 acres			
-Begin March 2020 end January 2023			
General Office Building	536.75	1000sqft	536,750
Parking Lot	85.00	1000sqft	--
Run: 18-072 200 Caribbean Construction			
- Area Size = 26.70 acres			
- Begin January 2020 end September 2023			
General Office Building	505.14	1000sqft	505,140
Parking Lot	85.00	1000sqft	--
Unenclosed Parking with Elevator	1,235.00	Space	376,145
Run: 18-072 Caribbean Construction Parking			
- Area Size = 8.66 acres			
-Begin and end in 2019			

Parking Lot	8.66	Acre	--
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The traffic information was combined with motor vehicle emissions factors, based on the State's latest on-road mobile emission factor model. The latest version of the model made available by CARB is EMFAC2017¹⁶. EMFAC2017 provides aggregate emission rates in grams per mile for each vehicle type. The vehicle mix for this study was based on CalEEMod default assumptions, where worker trips are assumed to be comprised of light-duty autos (EMFAC category LDA) and light duty trucks (EMFAC category LDT1and LDT2). Vendor trips are comprised of delivery and large trucks (EMFAC category MHDT and HHDT) and haul trucks, including cement trucks, are comprised of large trucks (EMFAC category HHDT). Travel distances are based on CalEEMod default lengths, which are 10.8 miles for worker travel, 7.3 miles for vendor trips and 20 miles for hauling (demolition export and soil import). Since CalEEMod does not address cement trucks, these were treated as vendor travel distances. Each trip was assumed to include an idle time of 5 minutes. Emissions associated with vehicle starts were also included. Table 5 provides the traffic inputs that were combined with the EMFAC2017 emission database to compute vehicle emissions.

¹⁶ See CARB's EMFAC2017 Web Database at <https://www.arb.ca.gov/emfac/2017/>, accessed May 1, 2018

TABLE 5 Traffic Data Used for EMFAC2017 Model Runs

CalEEMod Run/Land Uses and Construction Phase	Total Trips by Trip Type			Notes
	Worker ¹	Vendor ¹	Haul ²	
Vehicle mix ¹	50% LDA 25% LDT1 25% LDT2	50% MHDT 50% HHDT	100% HDDT	
Trip Length (miles)	10.8	7.3	20.0 Demo & Soil 7.3 cement	truck idle time = 5 minutes
100 Caribbean Construction				
-Area Size = 18.20 acres				
-Begin June 2019				
Demolition and Site Work	2,275	-	1,400	18,000 tons building material and 7,000 tons pavement
Site Preparation/Grading/Soil Import	2,365	-	12,625	Import of 101,000 cy
Piles/Foundations/Utilities	3,360	-	2,640	540 + 780 cement trucks
Building Structures	79,695	39,270	1,840	920 cement trucks
Building Exterior and Green Roof	58,995	29,070	1,300	Import of 6,500 cy
Paving	3,280	-	-	
Building Interiors	10,865	-	-	
200 Caribbean Construction				
-Area Size = 26.70 acres				
-Begin March 2019				
Demolition and Site Work	2,975	-	1,600	24,000 tons building material and 8,000 tons pavement
Site Preparation/Grading/Soil Import	2,365	-	22,188	Export 15,000 cy Import 156,000 cy
Piles/Foundations/Utilities	4,515	-	2,458	461 + 684 + 84 cement trucks
Building Structures	70,700	30,975	3,110	920 + 635 cement trucks
Building Exterior and Green Roof	109,080	47,790	813	Import of 6,500 cy
Paving	6,800	-	-	
Building Interiors	19,440	-	-	
Run: 18-072 Caribbean Construction Parking				
-Area Size = 8.66 acres				
-Begin January 2019				
Demolition and Site Work	20	0	303	
Site Preparation/Grading/Soil Import	20	0	0	

Notes:

¹ Based on CalEEMod estimates

² Based on truck delivery estimates provided as part of the construction schedule and information

Construction Emissions Management Plan

The project includes measures to minimize construction emissions that pertain to dust generation, equipment exhaust and haul truck traffic exhaust. The effect of these measures was modeled as follows:

- The CalEEMod model mitigation module was used to model Tier 4 construction equipment. There are two types of Tier 4 equipment: Tier 4 interim and Tier 4 final. A combination of Tier 4 interim and Tier 4 final equipment was assumed.
- Measures that reduce dust generation were also modeled in the CalEEMod Mitigation modules, that reflect site watering and reduced on-site vehicle speeds.
- The EMFAC2017 model was used to compute emission factors for a fleet of haul trucks that are model year 2010 or newer. These rates were combined with the forecast of truck trips predicted by CalEEMod for material hauling.

Construction Period Emissions

The anticipated construction schedule assumes that the project would be built out over a period of approximately 3 years beginning as early as January 2019, or an estimated 780 construction workdays (assuming an average of 260 construction days per year for at least 3 years).

Average daily emissions were computed by dividing the total construction emissions by the number of construction days. Table 6 shows average daily construction emissions of ROG, NOx, PM₁₀ exhaust, and PM_{2.5} exhaust during construction of the project. As indicated in Table 6, predicted project emissions would not exceed the BAAQMD significance thresholds. Construction period emissions are considered *less than significant*.

TABLE 6 Construction Period Emissions

Scenario	ROG	NOx	PM ₁₀ Exhaust	PM _{2.5} Exhaust
Parking and Office construction emissions Equipment Traffic	0.13 tons <0.01 tons	0.46 tons 0.02 tons	0.06 tons <0.00 tons	0.06 tons <0.00 tons
100 Caribbean construction emissions Equipment Traffic	3.12 tons 0.35 tons	4.85 tons 3.79 tons	0.07 tons 0.07 tons	0.08 tons 0.07 tons
200 Caribbean construction emissions Equipment Traffic	2.96 tons 0.46 tons	3.12 tons 3.79 tons	0.04 tons 0.10 tons	0.04 tons 0.09 tons
Total construction emissions (tons)	7.01 tons	17.44 tons	0.35 tons	0.34 tons
Average daily emissions (pounds) ¹	18 lbs.	45 lbs.	1 lbs.	1 lbs.
BAAQMD Thresholds (pounds per day)	54 lbs.	54 lbs.	82 lbs.	54 lbs.
Exceed Threshold?	No	No	No	No

Notes: ¹ Assumes 3 years or 780 workdays.

Construction activities, particularly during site preparation and grading, would temporarily generate fugitive dust in the form of PM₁₀ and PM_{2.5}. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after it dries. The BAAQMD CEQA Air Quality Guidelines consider these impacts to be less than significant if best management practices are implemented to reduce these emissions. The *Construction Emissions Management Plan* for this project implements measures that are consistent with the latest version of the BAAQMD CEQA Air Quality Guidelines and the LUTE DEIR mitigation measure for construction period emissions (*MM 3.5.3*) that pertain to construction period emissions.

Operational Period Emissions

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

Land Uses

The project land uses were input to CalEEMod for the full project build-out and the existing uses as shown in Table 7.

TABLE 7 Summary of CalEEMod Operational Model Runs

CalEEMod Run/Land Uses	Size	Units	Building Floor Area (sf)
Run: Google Caribbean Campuses			
<i>- Begin Operation = 2023</i>			
Office Park	1,041.89	1000sqft	1,041,890
Unenclosed Parking with Elevator	1,235	Space	379,145
Parking Lot	286.4	1000sqft	286,400
Run: Existing 100- 200 Caribbean Uses			
<i>- Begin Operation = 2023</i>			
General Light Industry	50.88	1000sqft	50,880
General Office Building	25.20	1000sqft	25,200
Unrefrigerated Warehouse-No Rail	108.51	1000sqft	108,510
Manufacturing	125.64	1000sqft	125,640

Model Year

Emissions associated with vehicle travel depend on the year of analysis because emission control technology requirements are phased-in over time. Therefore, the earlier the year analyzed in the model, the higher the emission rates utilized by CalEEMod. The earliest the project could possibly

be constructed and begin operating would be 2023. Emissions associated with build-out later than 2023 would be lower.

Trip Generation Rates

CalEEMod allows the user to enter specific vehicle trip generation rates, which were input to the model using the daily trip generation rate provided in the project trip generation table, which includes a 12.5-percent trip reduction due to implementation of a Transportation Demand Management (TDM) program used in the traffic analysis. Note that this project is planning to achieve a 25-percent TDM trip reduction (30-percent reduction for peak hour). When incorporating the effect of the TDM Plan, the project is predicted to generate 9,017 weekday trips¹⁷. The default trip lengths and trip types specified by CalEEMod were used.

Energy

CalEEMod defaults for energy use include the 2016 Title 24 building standards. The project would be designed to achieve LEED Gold and it is estimated that, in doing so, the project would exceed the 2016 Title 24 standards. For this analysis, the project was assumed to exceed 2016 Title 24 standards by 5 percent¹⁸.

Project Generators

Stationary sources of air pollutants are one 600 kW and one 1,000 kW diesel engines that power generators to provide emergency backup power in the event of a power failure. These generators would be operated for testing and maintenance purposes, with a maximum of 50 hours each per year of non-emergency operation under normal conditions allowed by BAAQMD. During testing periods, the engine would typically be run for less than one hour. The engine would be required to meet CARB and EPA emission standards and consume commercially available California low-sulfur diesel fuel. The generator and boiler emissions were modeled using CalEEMod.

Other Inputs

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

Existing Land Uses

The project would replace existing land uses that are currently in operation. The primary source of emissions from these uses are traffic. The project traffic forecasts also include trip generation rates that were applied to the existing uses.

¹⁷ Wood-Rodgers. 2019. *100-200 W Caribbean Drive TIA Draft, Sunnyvale, CA*. February

¹⁸ Note that the CEC predicts non-residential uses built in 2020 or later would have be 30-percent more energy efficient. See *2019 Building Energy Efficiency Standards*
https://www.energy.ca.gov/title24/2019standards/documents/2018_Title_24_2019_Building_Standards_FAQ.pdf

Modeling Output and Assumptions

Emissions from existing uses were subtracted from the project emissions to predict the increase in pollutant emissions caused by the project. As shown in Table 8, operational emissions would not exceed the BAAQMD significance thresholds. This would be considered a *less-than-significant* impact. *Attachment 1* includes the CalEEMod output values and modeling assumptions for construction emissions.

TABLE 8 Operational Emissions

Scenario	ROG	NOx	PM ₁₀	PM _{2.5}
2023 Project Operational Emissions (<i>tons/year</i>)	6.64 tons	7.29 tons	6.40 tons	1.82 tons
Existing Operational Emissions (<i>tons/year</i>)	1.65 tons	1.26 tons	1.16 tons	0.33 tons
Net Project Total Operational Emissions (<i>tons/year</i>)	4.99 tons	6.03 tons	5.24 tons	1.49 tons
<i>BAAQMD Thresholds (<i>tons /year</i>)</i>	<i>10 tons</i>	<i>10 tons</i>	<i>15 tons</i>	<i>10 tons</i>
<i>Exceed Threshold?</i>	No	No	No	No
Net Project Total Operational Emissions (<i>pounds/day</i>)	27 lbs.	33 lbs.	29 lbs.	8 lbs.
<i>BAAQMD Thresholds (<i>pounds/day</i>)</i>	<i>54 lbs.</i>	<i>54 lbs.</i>	<i>82 lbs.</i>	<i>54 lbs.</i>
<i>Exceed Threshold?</i>	No	No	No	No

¹ Assumes 365-day operation.

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

Air Quality Standards for Regional Air Pollutants

Emissions of nonattainment pollutants and their precursors that affect air quality standards at the regional level were evaluated above. Although the project could cause a cumulatively considerable net increase in ozone precursor emissions (i.e., construction NOx emissions exceed significance thresholds), they are not expected to cause or substantially contribute to a violation of an ozone ambient air quality standard. The magnitude of the project NOx emissions compared to region-wide emissions that cause ozone ambient air quality standards to be exceeded is quite small. As described in the BAAQMD CEQA Air Quality Guidelines, “no single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards.” So project emissions of NOx are not anticipated to cause or contribute substantially to an air quality violation.

At a local level, a project could affect ambient air quality standards for particulate matter (PM₁₀ and to some extent PM_{2.5}); however, BAAQMD considers appropriate application of control measures to mitigate this impact (as previously described).

Carbon monoxide emissions from traffic generated by the project would be the pollutant of greatest concern at the local level. Congested intersections with a large volume of traffic have the greatest potential to cause high-localized concentrations of carbon monoxide. Air pollutant monitoring data indicate that carbon monoxide levels have been at healthy levels (i.e., below State and federal standards) in the Bay Area since the early 1990s. As a result, the region has been designated as

attainment for the standard. The highest measured level over any 8-hour averaging period during the last 3 years in the Bay Area is less than 3.0 parts per million (ppm), compared to the ambient air quality standard of 9.0 ppm. Intersections affected by the project would have traffic volumes well below the BAAQMD screening criteria of 44,000 vehicles during the peak hour, and thus, would not cause a violation of an ambient air quality standard or have a considerable contribution to cumulative violations of these standards.¹⁹ The project would not cause the violation of an air quality standard or worsen an existing violation of an air quality standard.

Because appropriate dust control measures are required to ensure PM₁₀ and PM_{2.5} emissions are minimized, this impact is considered ***less than significant***.

Impact: Expose sensitive receptors to substantial pollutant concentrations?

BAAQMD has developed community risk thresholds that evaluate increased cancer risk, non-cancer adverse health impacts in terms of a hazard index and annual PM_{2.5} concentrations (see Table 1). Project construction would be a temporary source of TAC and PM_{2.5} emissions. Most on-site construction equipment would be diesel-powered. DPM that would be emitted from this equipment and trucks used during construction, is a TAC that can elevate cancer risk and PM_{2.5} concentrations.

In applying the community risk thresholds, BAAQMD recommends that sensitive receptors within 1,000 feet of a project be considered. The closest sensitive receptors to the project are located well beyond 1,000 feet at more than 3,000 feet. Figure 2 shows the project affected areas and the area within 1,000 feet of the site. A health risk assessment of the project construction activities was not conducted since sensitive receptors are located far away from the site. Given the large distance and temporary nature of this impact, community risk caused by construction is considered ***less than significant***. It should be noted that Mitigation Measure AQ-1 would substantially reduce the emissions of TACs and PM_{2.5} during construction.

¹⁹ For a land-use project type, the BAAQMD CEQA Air Quality Guidelines state that a proposed project would result in a less than significant impact to localized carbon monoxide concentrations if the project would not increase traffic at affected intersections with more than 44,000 vehicles per hour.

Figure 2. Project Site and Approximate 1,000-foot Area of Influence for Assessing TAC Impacts



Long-term operational emissions from the project would include traffic (including delivery truck traffic), DPM emissions from routine testing and maintenance operation of diesel engines used to power the back-up emergency generators, and natural gas combustion from equipment used to provide space and water heating. Each of these sources would have minor emissions of TACs or PM_{2.5}. The emissions from generator operation (limited to 50 hours per year for non-emergency conditions) and natural gas combustion would be located more than 3,000 feet from sensitive receptors and have negligible effects. Traffic emissions would be spread out over a large area and have a negligible effect on any one sensitive receptor. In their guidance for evaluating traffic community risk thresholds, BAAQMD recommends projects evaluate roadways near sensitive receptors with over 10,000 average daily trips. The project would generate about 9,000 daily trips distributed over many roadways. The net increase in traffic when considering operation of the existing uses would be less.

The project in the short-term (i.e., during construction) or long-term (i.e., operation) would not cause cancer risk, non-cancer health effects or annual PM_{2.5} concentrations to exceed the community risk thresholds. This would be a ***less-than-significant*** impact.

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

The project is not considered a source of odors that would result in frequent odor complaints. In addition, there are no sensitive receptors, such as residents, that would be sensitive to odors near the project. Project construction activities could result in odorous emissions from diesel exhaust associated with construction equipment, architectural coatings and application of asphalt during paving. However, because of the temporary nature of these emissions or activities and the highly

diffusive properties of diesel exhaust and fumes, exposure of sensitive receptors to these emissions would be limited. Odor impacts would be *less-than-significant*.

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

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

Significance Thresholds

The BAAQMD CEQA Air Quality Guidelines recommend GHG significance thresholds for land use projects and stationary sources (i.e., equipment that emits GHG and has to obtain a permit to operate from BAAQMD). BAAQMD's recommended GHG threshold of 1,100 metric tons or 4.6 metric tons per capita was developed based on meeting the 2020 GHG targets set in the scoping plan that addressed AB 32. Development of the project would occur beyond 2020, so a threshold that addresses a future target is appropriate. The basis of the BAAQMD thresholds were used to develop plan level thresholds for 2040. Although BAAQMD has not published a quantified threshold for 2030 yet, this assessment uses a "Substantial Progress" efficiency metric of 2.8 MT CO₂e/year/service population (SP). This is calculated for 2030 based on the GHG reduction goals of EO B-30-15, taking into account the 1990 inventory and the projected 2030 statewide target goal of a 40-percent reduction of 1990 levels by 2030.²⁰ This analysis assumes that 2020 levels will be equal or below 1990 levels. CARB reports that California is on target for meeting the 2020 GHG emission reduction goal. Many of the GHG reduction measures (e.g., Low Carbon Fuel Standard, Advanced Clean Car standards, and Cap-and-Trade) have been adopted over the last five years and implementation activities are ongoing²¹. The threshold for stationary sources that are permitted by BAAQMD is 10,000 MT/year.

The 2018 updated CEQA Guidelines state that in determining the significance of a project's GHG emissions, the analysis should focus on predicting a reasonably foreseeable incremental contribution of the project's emissions to the effects of climate change. The agency's analysis should consider a timeframe that is appropriate for the project. The CEQA Guidelines recommend that the analysis must reasonably reflect evolving scientific knowledge and state regulatory schemes. For this analysis, a time frame that includes the first conceivable year of operation and year 2030 operating conditions were used. Year 2030 is considered to occur in an appropriate timeframe where reasonable predictions can be made using available modeling techniques that involve traffic and emission rate projections. Therefore, potential GHG emissions were predicted out to year 2030. The new Scoping Plan establishes a path that will reduce GHG emissions in

²⁰ Association of Environmental Professionals, 2016. *Beyond 2020 and Newhall: A Field Guide to New CEQA Greenhouse Gas Thresholds and Climate Action Plan Targets for California*. April.

²¹ CARB. 2018. AB 32 Scoping Plan. See <https://www.arb.ca.gov/cc/scopingplan/scopingplan.htm>

California to meet the 2030 target that is 40 percent lower than 1990 levels. For this analysis, year 2020 levels are considered to be equivalent to 1990 levels.

Qualified GHG Reduction Plan

In 2014, the City adopted the City of Sunnyvale Climate Action Plan (CAP).²² This plan contains strategies to reduce GHG emissions that achieve a 15 percent reduction below 2008 emissions levels by 2020. This Climate Action Plan is intended to streamline future environmental review of development projects in Sunnyvale by following the BAAQMD CEQA Air Quality Guidelines for a Qualified GHG Reduction Strategy. The CAP includes a checklist that identifies the minimum criteria a project must demonstrate to use the City's CAP for purposes of streamlining the analysis of GHG emissions under CEQA. Minimum criteria outlined below includes: 1) consistency with CAP forecasts, and 2) incorporation of applicable Near-Term (prior to 2016) strategies and measures from the CAP as binding and enforceable components of the project. Any projects that exceed the 2020 forecasts may still rely on the CAP for identification of measures and standards for mitigation. However, since such projects would exceed the assumptions of the CAP forecast, the City requires that the project demonstrate anticipated project-level GHG emissions estimates using CalEEMod. An analysis of project-level GHG emissions was conducted using the BAAQMD CEQA Air Quality Guidelines. Emissions for the proposed project are discussed below and were analyzed using the methodology recommended in the BAAQMD CEQA Air Quality Guidelines.²³

CalEEMod Modeling

CalEEMod was used to predict GHG emissions from operation of the site assuming full build-out of the project. The project land use types and size and other project-specific information were input to the model, as described previously for computing criteria air pollutant emissions.

Several features to reduce GHG emissions were included in the CalEEMod modeling. The project proposes to install solar photovoltaic power systems at the parking facility that is estimated to produce 1,794,800 kilowatts of electricity annually. In addition, the project is intended to be designed LEED Gold and would likely exceed 2016 Title 24 standards for building efficiency by at least 5 percent²⁴. Low-flow water fixtures and water-efficient irrigation systems would be included in the project. Since the project would have a high density of workers, the rate of solid waste generated was adjusted based on the applicant's projections of 42.8 cubic yards per workday.

GHG emissions modeling include the indirect emissions from electricity consumption. The electricity produced emission rate was modified in CalEEMod. CalEEMod has a default emission factor of 641.3 pounds of CO₂ per megawatt of electricity produced, which is based on PG&E's 2008 emissions rate. PG&E published 2016 emissions rates, which is the emission rate for delivered electricity had been reduced to 295 pounds of CO₂ per megawatt of electricity

²² Available at: <http://www.pmcworld.com/client/sunnyvale/documents/final-ClimateActionPlan.pdf>. Accessed on June 16, 2017.

²³ BAAQMD, 2017. *Op cit.*

²⁴ Note that the CEC predicts non-residential uses built in 2020 or later would have be 30-percent more energy efficient. See *2019 Building Energy Efficiency Standards* https://www.energy.ca.gov/title24/2019standards/documents/2018_Title_24_2019_Building_Standards_FAQ.pdf

delivered²⁵. The projected GHG intensity factor for the year 2020 is 290 pounds of CO₂ per megawatt of electricity produced, which was input to the model²⁶. Note that PG&E's latest confirmed emission rate for 2016 just about achieves the projected 2020 rate²⁷.

Service Population Emissions

The project service population efficiency rate is based on the number of future full-time employees. According to the applicant, the number of future full-time employees is estimated at 4,500 workers.

Construction Emissions

GHG emissions associated with construction were computed to be 7,303 MT of CO₂e for the total construction period. These are the emissions from on-site operation of construction equipment, vendor and hauling truck trips, and worker trips. Neither the City nor BAAQMD have an adopted threshold of significance for construction-related GHG emissions, though BAAQMD recommends quantifying emissions and disclosing that GHG emissions would occur during construction. BAAQMD also encourages the incorporation of best management practices to reduce GHG emissions during construction where feasible and applicable. Best management practices assumed to be incorporated into construction of the proposed project include but are not limited to: using local building materials of at least 10 percent and recycling or reusing at least 50 percent of construction waste or demolition materials.

Operational Emissions

The LUTE DEIR identified GHG emissions associated with the LUTE as cumulatively considerable because of different methods between the LUTE and CAP analyses to GHG emissions per service population. The emissions for the LUTE were computed to be below the CAP threshold of 2.7 metric tons per service population. This analysis predicts the GHG emissions from the proposed project and compares them to a service population threshold that is based on the BAAQMD CEQA Guidelines, adjusted for the latest Statewide GHG reduction goals for 2030.

The CalEEMod model, along with the project vehicle trip generation rates, was used to estimate annual emissions associated with operation of the fully-developed site under the proposed project. In 2023 as shown in Table 10, annual emissions resulting from operation of the proposed project are predicted to be 11,019 MT of CO₂e (plus 76 MT that is associated with stationary sources). The annual emissions from operation of the existing buildings are computed as 2,015 MT of CO₂e. The net emissions resulting from the project would be 9,004 MT of CO₂e. The service population threshold was used to determine the significance. Note that BAAQMD recommends that emissions from stationary sources that they permit be compared against a separate threshold of 10,000 MT/year. As shown in Table 10, service population emissions would be below the BAAQMD

²⁵ PG&E 2017. Climate Change. See <https://www.pgecurrents.com/2018/03/26/independent-registry-confirms-record-low-carbon-emissions-for-pge/> accessed March 26, 2019.

²⁶ PG&E. 2015. Greenhouse Gas Emission Factors: Guidance for PG&E Customers

See: https://www.pge.com/includes/docs/pdfs/shared/environment/calculator/pge_ghg_emission_factor_info_sheet.pdf

²⁷ PG&E. 2018. *Independent Registry Confirms Record Low Carbon Emissions for PG&E* March 26. See <https://www.pgecurrents.com/2018/03/26/independent-registry-confirms-record-low-carbon-emissions-for-pge/>

threshold for 2020 and the projected future threshold (i.e., for 2030) and, therefore, this would be considered a *less-than-significant* impact.

TABLE 10 Annual Project GHG Emissions (CO₂e) in Metric Tons

Source Category	Existing in 2023	Proposed Project in 2023	Proposed Project in 2030
Area	0	0	0
Energy Consumption	677	3,588	3,588
Mobile	1,069	5,965	4,944
Solid Waste Generation	173	1,208	1,206
Water Usage	95	260	260
Total	2,015	11,019	9,998
Net New Emissions		9,004	
Service Population Emissions (New Emissions/Number of Employees)		2.45	2.22
Significance Threshold		4.6 in 2020 2.8 in 2030	2.8 in 2030
Permitted Stationary Sources	--	76	76
Significance Threshold		10,000	

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

AB 32, the Global Warming Solutions Act of 2006, codifies the State of California's GHG emissions target by directing CARB to reduce the state's global warming emissions to 1990 levels by 2020. AB 32 was signed and passed into law by Governor Schwarzenegger on September 27, 2006. Since that time, CARB, CEC, the California Public Utilities Commission (CPUC), and the Building Standards Commission have all been developing regulations that will help meet the goals of AB 32 and Executive Order S-3-05. A Scoping Plan for AB 32 was adopted by CARB in December 2008. It contains the State of California's main strategies to reduce GHGs from BAU emissions projected in 2020 back down to 1990 levels. BAU is the projected emissions in 2020, including increases in emissions caused by growth, without any GHG reduction measures. The Scoping Plan has a range of GHG reduction actions, including direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms such as a cap-and-trade system. It required CARB and other state agencies to develop and adopt regulations and other initiatives reducing GHGs by 2012.

As directed by AB 32, CARB has also approved a statewide GHG emissions limit. On December 6, 2007, CARB staff resolved an amount of 427 MMT of CO₂e as the total statewide GHG 1990 emissions level and 2020 emissions limit. The limit is a cumulative statewide limit, not a sector- or facility-specific limit. CARB updated the future 2020 BAU annual emissions forecast, in light of the economic downturn, to 545 MMT of CO₂e. Two GHG emissions reduction measures currently enacted that were not previously included in the 2008 Scoping Plan baseline inventory were included, further reducing the baseline inventory to 507 MMT of CO₂e. Thus, an estimated reduction of 80 MMT of CO₂e is necessary to reduce statewide emissions to meet the AB 32 target by 2020. In, CARB issued *California's 2017 Climate Change Scoping Plan*. While the State is on

track to exceed the AB 32 scoping plan 2020 targets (i.e., meeting 1990 levels by 2020), this plan is an update to reflect the enacted SB 32 reduction target of reducing 1990 levels 40 percent by 2030.

The proposed project would not conflict or otherwise interfere with the statewide GHG reduction measures identified in CARB's Scoping Plan. The project would comply with requirements of the new Green Building Standards Code. For example, proposed buildings would be constructed in conformance with CALGreen and the Title 24 Building Code, which requires high-efficiency water fixtures and water-efficient irrigation systems. The project would be designed to meet the City's requirement of Gold certification under LEED v4 BD+C: New Construction as a condition of entitlement. The consistency of the project with respect to the City's Climate Action Plan, or CAP, is described in Attachment 2 along with the CAP CEQA Checklist.

Attachment 1: CalEEMod Output Worksheets, Construction Schedule

Construction Information

Project Name: Google Caribbean Campus - 100 Site

See Equipment Type TAB for type, horsepower and load factor

Complete ALL Portions in Yellow

Google Caribbean Campus 100 Building

Project Size	0	Dwelling Units	Approx 18.2	total project acres disturbed
	0	s.f. residential		
	0	s.f. retail		
	536,750	s.f. office/commercial		
	0	s.f. other, specify:		
	0	s.f. parking garage	spaces	
	85,000	s.f. parking lot	spaces	

Pile Driving: (N) - Using Auger Displacement

Qty	Description	HP	Load Factor		Hours/day	Total Work Days	Avg. Hours per day	Annual Hours	HP Hours	Comments
	Demolition of Existing Buildings and Sitework	Start Date:	3/27/2020	Total phase:	85					Demolition Volume
		End Date:	8/14/2020							Square footage of buildings to be demolished
4	Concrete/Industrial Saws	81	0.73		10	30	4	1200	70,956	(or total tons to be hauled)
1	Crushing/Proc. Equipment	85	0.78		10	40	5	400	26,520	
2	Rubber-Tired Dozers	255	0.4		10	50	6	1000	102,000	309,440 (existing building) square feet or
2	Rubber Tired Loaders	199	0.36		10	50	6	1000	71,640	Approx. 18,000 Hauling volume (tons)
3	Excavators	162	0.38		10	50	6	1500	92,340	Any pavement demolished and hauled? Appx. 7,000 tons
2	Tractors/Loaders/Backhoes	97	0.37		10	40	5	800	28,712	
	Site Preparation / Grading / Import Soil	Start Date:	8/14/2020	Total phase:	55					Soil Hauling Volume
		End Date:	11/2/2020							Export volume = 0 cubic yards
4	Scrapers	361	0.48		10	40	7	1600	277,248	Import volume = 101,000 cubic yards
2	Graders	174	0.41		10	45	8	900	64,206	
2	Excavators	162	0.38		10	40	7	800	49,248	
3	Rollers	80	0.38		10	55	10	1650	50,160	
2	Rubber Tired Loaders	199	0.36		10	40	7	800	57,312	
1	Sweepers/Scrubbers	64	0.46		10	55	10	550	16,192	
2	Skid Steer Loaders	64	0.37		10	55	10	1100	26,048	
1	Tractors/Loaders/Backhoes	97	0.37		10	30	5	300	10,767	Modeled as trucks in EMFAC2017
	Dumpers/Tenders	16	0.38		10	40				
	Piles / Foundations / Utilities	Start Date:	10/13/2020	Total phase:	85					
		End Date:	1/25/2021							
2	Bore/Drill Rigs	205	0.5		10	45	5	900	92,250	Cement Trucks: Approx. 540 Total Round-Trips
2	Cranes	226	0.29		10	45	5	900	58,986	
2	Forklifts	89	0.2		10	70	8	1400	24,920	
3	Excavators	162	0.38		10	50	6	1500	92,340	
2	Rubber Tired Loaders	199	0.36		10	50	6	1000	71,640	
2	Tractors/Loaders/Backhoes	97	0.37		10	50	6	1000	35,890	
3	Dumpers/Tenders	16	0.38		10	50	6	1500	9,120	
2	Concrete Pump	84	0.74		10	15	2	300	18,648	Cement Trucks: Approx. 780 Total Round-Trips
2	Skid Steer Loaders	64	0.37		10	50	6	1000	23,680	
2	Sweepers/Scrubbers	64	0.46		10	55	6	1100	32,384	
	Building Structures	Start Date:	1/26/2021	Total phase:	175					
		End Date:	10/4/2021							
2	Cranes	226	0.29		10	35	2	700	45,878	Or temporary line power? (Y/N)
2	Forklifts	89	0.2		10	35	2	700	12,460	Electric? (Y/N) Otherwise assumed diesel
4	Generator Sets	84	0.74		10	40	2	1600	99,456	Liquid Propane (LPG)? (Y/N) Otherwise Assumed diesel
4	Welders	46	0.45		10	40	2	1600	33,120	
1	Other Construction Equipment	171	0.42		10	30			-	Modeled as trucks in EMFAC2017
1	Concrete Pump	84	0.74		10	60	3	600	37,296	Cement Trucks: Approx. 920 Total Round-Trips
1	Other Construction Equipment (Concrete Truck)	171	0.42		10	60			-	Modeled as trucks in EMFAC2017
1	Other Construction Equipment	171	0.42		10	60			-	Modeled as trucks in EMFAC2017
1	Tractors/Loaders/Backhoes	97	0.37		10	40	2	400	14,356	
	Building Exterior & Green Roof	Start Date:	7/26/2021	Total phase:	310					
		End Date:	10/18/2022							
1	Cranes	226	0.29		10	170	5	1700	111,418	
3	Forklifts	89	0.2		10	150	5	4500	80,100	
4	Aerial Lifts	62	0.31		10	125	4	5000	96,100	
1	Other Construction Equipment	171	0.42		10	200			-	Modeled as trucks in EMFAC2017
2	Skid Steer Loaders	64	0.37		10	50	2	1000	23,680	
1	Tractors/Loaders/Backhoes	97	0.37		10	50	2	500	17,945	Import volume = 6,500 cubic yards
	Dumpers/Tenders	16	0.38		10	50				
	Building Interiors	Start Date:	11/17/2021	Total phase:	265					
		End Date:	11/3/2022							
	Air Compressors	78	0.48		8	160	5	0	-	Can these be electric? - YES
	Aerial Lift / Scissor Lift	62	0.31		8	200	6	0	-	Can these be electric? - YES
3	Forklifts	89	0.2		8	160	5	3840	68,352	
1	Cranes	226	0.29		8	48	1	384	25,167	
1	Generator Sets	84	0.74		8	90	3	720	44,755	
1	Welders	46	0.45		8	90	3	720	14,904	
	Other General Industrial Equipment	150	0.34		8	240			-	Modeled as trucks in EMFAC2017
	Paving / Site Work	Start Date:	5/20/2022	Total phase:	170					
		End Date:	1/24/2023							
1	Pavers	125	0.42		8	20	1	160	8,400	
1	Paving Equipment	130	0.36		8	20	1	160	7,488	
4	Plate Compactors	8	0.43		8	30	1	960	3,302	
3	Rollers	80	0.38		8	20	1	480	14,592	
1	Surfacing Equipment	253	0.3		8	20	1	160	12,144	
2	Sweepers/Scrubbers	64	0.46		8	40	2	640	18,842	
2	Skid Steer Loaders	64	0.37		8	80	4	1280	30,310	
2	Forklifts	89	0.2		8	40	2	640	11,392	
1	Other Construction Equipment	171	0.42		8	80			-	Modeled as trucks in EMFAC2017

Equipment types listed in "Equipment Types" worksheet tab.

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

It is assumed that water trucks would be used during grading

Add or subtract phases and equipment, as appropriate

Modify horsepower or load factor, as appropriate

Piles - Building

Building Steel

Building Concrete

Green Roof

Project Name: Google Caribbean Campus - 200 Site (Includes West Channel)

Complete ALL Portions in Yellow

See Equipment Type TAB for type, horsepower and load factor

Google Caribbean Campus 200 Building

Project Size	0	Dwelling Units	Approx. 26.7	total project acres disturbed
	0	s.f. residential		
	0	s.f. retail		
	505,140	s.f. office/commercial		
	81,000	s.f. other, specify: Central Utility Plant		
	379,145	s.f. parking garage	1,235	spaces
	201,400	s.f. parking lot		spaces

Pile Driving: (N) - Using Auger Displacement

Construction Hours										
				7 am. to		5 pm				
Qty	Description	HP	Load Factor		Hours/day	Total Work Days	Avg. Hours per day	Annual Hours	HP Hours	Comments
	Demolition of Existing Buildings and Sitework	Start Date:		12/30/2019	Total phase:	85				Demolition Volume
		End Date:		5/11/2020						Square footage of buildings to be demolished (or total tons to be hauled)
4	Concrete/Industrial Saws	81	0.73		10	30	4	1200	70,956	
1	Crushing/Proc. Equipment	85	0.78		10	40	5	400	26,520	
2	Rubber-Tired Dozers	255	0.4		10	50	6	1000	102,000	<u>399,900 (existing building)</u> square feet or <u>Approx. 24,000</u> Hauling volume (tons)
2	Rubber Tired Loaders	199	0.36		10	55	6	1100	78,804	
3	Excavators	162	0.38		10	55	6	1650	101,574	Any pavement demolished and hauled? <u>Appx. 8,000</u> tons
2	Tractors/Loaders/Backhoes	97	0.37		10	40	5	800	28,712	
	Site Preparation / Grading / Import Soil	Start Date:		5/26/2020	Total phase:	55				Soil Hauling Volume
		End Date:		8/12/2020						Export volume = <u>15,000</u> cubic yards Import volume = <u>155,000</u> cubic yards
4	Scrapers	361	0.48		10	40	7	1600	277,248	
2	Graders	174	0.41		10	45	8	900	64,206	
2	Excavators	162	0.38		10	40	7	800	49,248	
3	Rollers	80	0.38		10	55	10	1650	50,160	
2	Rubber Tired Loaders	199	0.36		10	40	7	800	57,312	
1	Sweepers/Scrubbers	64	0.46		10	55	10	550	16,192	
2	Skid Steer Loaders	64	0.37		10	55	10	1100	26,048	
1	Tractors/Loaders/Backhoes	97	0.37		10	30	5	300	10,767	
	Dumpers/Tenders	16	0.38		10	55				Modeled as trucks in EMFAC2017
	Piles / Foundations / Utilities	Start Date:		7/23/2020	Total phase:	105				
		End Date:		12/15/2020						
2	Bore/Drill Rigs	205	0.5		10	45	4	900	92,250	Cement Trucks: <u>Approx. 461</u> Total Round-Trips
2	Cranes	226	0.29		10	45	4	900	58,986	
2	Forklifts	89	0.2		10	70	7	1400	24,920	
3	Excavators	162	0.38		10	50	5	1500	92,340	
2	Rubber Tired Loaders	199	0.36		10	50	5	1000	71,640	
2	Tractors/Loaders/Backhoes	97	0.37		10	50	5	1000	35,890	
1	Dumpers/Tenders	16	0.38		10	50	5	1500	9,120	
2	Concrete Pump	84	0.74		10	15	1	300	18,648	
	Other Construction Equipment (Concrete Truck)	171	0.42		10	30				Cement Trucks: <u>Approx. 684</u> Total Round-Trips
	Other Construction Equipment (Concrete Truck)	171	0.42		10	4				Cement Trucks: <u>Approx. 84</u> Total Round-Trips
2	Skid Steer Loaders	64	0.37		10	50	5	1000	23,680	
2	Sweepers/Scrubbers	64	0.46		10	55	5	1100	32,384	
	Building Structures	Start Date:		10/30/2020	Total phase:	175				
		End Date:		7/15/2021						
2	Cranes	226	0.29		10	35	2	700	45,878	Or temporary line power? (Y/N)
2	Forklifts	89	0.2		10	35	2	700	12,460	Electric? (Y/N) Otherwise assumed diesel
4	Generator Sets	84	0.74		10	40	2	1600	99,456	Liquid Propane (LPG)? (Y/N) Otherwise Assumed diesel
4	Welders	46	0.45		10	40	2	1600	33,120	
	Other Construction Equipment	171	0.42		10	30				Modeled as trucks in EMFAC2017
1	Concrete Pump	84	0.74		10	60	3	600	37,296	
	Other Construction Equipment (Concrete Truck)	171	0.42		10	60				Cement Trucks: <u>Approx. 920</u> Total Round-Trips
	Other Construction Equipment	171	0.42		10	60				Modeled as trucks in EMFAC2017
1	Cranes	226	0.29		10	30	2	300	19,662	
2	Forklifts	89	0.2		10	30	2	600	10,680	
	Other Construction Equipment	171	0.42		10	30				Modeled as trucks in EMFAC2017
1	Concrete Pump	84	0.74		10	24	1	240	14,918	
	Other Construction Equipment (Concrete Truck)	171	0.42		10	24				Cement Trucks: <u>Approx. 635</u> Total Round-Trips
1	Tractors/Loaders/Backhoes	97	0.37		10	40	2	400	14,356	
	Building Exterior & Green Roof	Start Date:		5/5/2021	Total phase:	270				
		End Date:		6/2/2022						
1	Cranes	226	0.29		10	150	6	1500	98,310	
3	Forklifts	89	0.2		10	150	6	4500	80,100	
4	Aerial Lifts	62	0.31		10	125	5	5000	96,100	
	Other Construction Equipment	171	0.42		10	200				Modeled as trucks in EMFAC2017
2	Skid Steer Loaders	64	0.37		10	50	2	1000	23,680	
1	Tractors/Loaders/Backhoes	97	0.37		10	50	2	500	17,945	
	Dumpers/Tenders	16	0.38		10	50				Import volume = <u>6,500</u> cubic yards
	Building Interiors	Start Date:		8/27/2021	Total phase:	240				
		End Date:		8/16/2022						
0	Air Compressors	78	0.48		8	160	5	0	-	Can these be electric? - YES
0	Aerial Lift / Scissor Lift	62	0.31		8	200	7	0	-	Can these be electric? - YES
3	Forklifts	89	0.2		8	160	5	3840	68,352	
1	Cranes	226	0.29		8	48	2	384	25,167	
1	Generator Sets	84	0.74		8	90	3	720	44,755	
1	Welders	46	0.45		8	90	3	720	14,904	
	Other General Industrial Equipment	150	0.34		8	240				Modeled as trucks in EMFAC2017
	Paving / Site Work	Start Date:		1/10/2022	Total phase:	170				
		End Date:		9/9/2022						
1	Pavers	125	0.42		8	20	1	160	8,400	
1	Paving Equipment	130	0.36		8	20	1	160	7,488	
4	Plate Compactors	8	0.43		8	30	1	960	3,302	
3	Rollers	80	0.38		8	20	1	480	14,592	
1	Surfacing Equipment	253	0.3		8	20	1	160	12,144	
2	Sweepers/Scrubbers	64	0.46		8	40	2	640	18,842	
2	Skid Steer Loaders	64	0.37		8	80	4	1280	30,310	
2	Forklifts	89	0.2		8	40	2	640	11,392	
	Other Construction Equipment	171	0.							

Construction CalEEMod Output

100 & 200 Caribbean Office -Construction Emissions

T4interim Mitigation & Post 2010 HDDT Trucks

Emissions

Condition	ROG	NOx	PM10	PM2.5	CO2
Demolition and Parking					
	2019	0.13	0.46	0.06	0.06
	2020	0.00	0.00	0.00	0.00
	2021	0.00	0.00	0.00	0.00
100 Caribbean Construction					
	2020	0.11	2.21	0.02	0.03
	2021	0.42	1.47	0.02	0.02
	2022	2.63	3.19	0.07	0.07
200 Caribbean Construction					
	2020	0.14	2.75	0.03	0.03
	2021	1.10	1.14	0.02	0.02
	2022	1.75	0.81	0.02	0.02
Traffic					
Demolition and Parking	0.00	0.02	0.00	0.00	
100 Caribbean Construction	0.35	3.55	0.07	0.07	
200 Caribbean Construction	0.46	4.70	0.10	0.09	
Total	7.09	20.31	0.41	0.41	tons
	14177	40611	814	814	lbs
	18	52	1	1	lbs/day
Days:	780				
Demolition and Parking		0.46			
		0.02			
100 Caribbean Construction		6.87			
		3.55			
200 Caribbean Construction		4.70			
		4.70			
		20.31			

**100 & 200 Caribbean Office -Construction Emissions
T4final Mitigation & Post 2010 HDDT Trucks**

Emissions

Condition	ROG	NOx	PM10	PM2.5	CO2
Demolition and Parking					
	2019	0.13	0.46	0.06	0.06
	2020	0.00	0	0.00	0.00
	2021	0.00	0	0.00	0.00
100 Caribbean Construction					
	2020	0.08	0.56	0.01	0.01
	2021	0.40	0.56	0.01	0.01
	2022	2.59	1.71	0.01	0.01
200 Caribbean Construction					
	2020	0.10	0.71	0.01	0.01
	2021	1.08	0.44	0.00	0.00
	2022	1.74	0.39	0.00	0.00
Traffic					63%
Demolition and Parking	0.00	0.02	0.00	0.00	
100 Caribbean Construction	0.35	3.55	0.07	0.07	
200 Caribbean Construction	0.46	4.70	0.10	0.09	
Total	6.94	13.11	0.29	0.27 tons	
	13883	26216	573	547 lbs	
	18	34	1	1 lbs/day	
Days:	780				
Demolition and Parking		0.46			
		0.02			
100 Caribbean Construction		2.83			
		3.55			
200 Caribbean Construction		1.54			
		4.70			
		13.11			

100 & 200 Caribbean Office -Construction Emissions
50%T4int+50%T4fin Mitigation & Post 2010 HDDT Trucks

Emissions

Condition	ROG	NOx	PM10	PM2.5	CO2
Demolition and Parking					
2019	0.13	0.46	0.06	0.06	
2020	0.00	0.00	0.00	0.00	
2021	0.00	0.00	0.00	0.00	
100 Caribbean Construction					
2019	0.10	1.39	0.02	0.02	
2020	0.41	1.02	0.01	0.01	
2021	2.61	2.45	0.04	0.04	
200 Caribbean Construction					
2019	0.12	1.73	0.02	0.02	
2020	1.09	0.79	0.01	0.01	
2021	1.74	0.60	0.01	0.01	
Traffic					
Demolition and Parking	0.00	0.02	0.00	0.00	
100 Caribbean Construction	0.35	3.79	0.07	0.07	
200 Caribbean Construction	0.46	5.20	0.10	0.09	
Total	7.01	17.44	0.35	0.34 tons	
	14030	34887	693	680 lbs	
	18	45	0.9	0.9 lbs/day	
Days:	780				

18-072 100 Caribbean Construction - Santa Clara County, Annual

18-072 100 Caribbean Construction
Santa Clara County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	536.75	1000sqft	18.20	536,750.00	0
Parking Lot	85.00	1000sqft	0.00	85,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	58
Climate Zone	4			Operational Year	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity = 290

Land Use - Acres = 18.2

Construction Phase - Based on schedule provided using total workdays and start dates by phase

Off-road Equipment - Unit & hours changed according to client spreadsheet

Off-road Equipment - Based on provided construction list

Off-road Equipment - Based on provided construction list

Off-road Equipment - Based on provided construction list

Off-road Equipment - Based on provided equipment list

Off-road Equipment - Unit & hours changed according to client spreadsheet

Off-road Equipment - Based on provided construction list

Off-road Equipment - Based on provided equipment list

Trips and VMT - Computing trips with EMFAC2017

Demolition - Demo Volume = 18,000 tons Hauling + 7,000 ton pavement demo

Grading - Import 101,000 cy during grading and 6,500cy import on building exterior green roof

Construction Off-road Equipment Mitigation - Tier 4, All Equipment Mitigated

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterExposedAreaPM10PercentReduction	61	55
tblConstDustMitigation	WaterExposedAreaPM25PercentReduction	61	55
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	14.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	13.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
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tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	20.00	265.00
tblConstructionPhase	NumDays	300.00	175.00
tblConstructionPhase	NumDays	300.00	310.00
tblConstructionPhase	NumDays	20.00	65.00
tblConstructionPhase	NumDays	30.00	55.00
tblConstructionPhase	NumDays	20.00	170.00
tblConstructionPhase	PhaseEndDate	11/17/2022	11/22/2022
tblConstructionPhase	PhaseEndDate	7/29/2021	9/29/2021
tblConstructionPhase	PhaseEndDate	9/22/2022	9/30/2022
tblConstructionPhase	PhaseEndDate	4/23/2020	6/25/2020
tblConstructionPhase	PhaseEndDate	6/4/2020	10/29/2020

tblConstructionPhase	PhaseEndDate	10/20/2022	1/12/2023
tblConstructionPhase	PhaseEndDate	6/4/2020	2/8/2021
tblConstructionPhase	PhaseStartDate	10/21/2022	11/17/2021
tblConstructionPhase	PhaseStartDate	6/5/2020	1/28/2021
tblConstructionPhase	PhaseStartDate	7/30/2021	7/26/2021
tblConstructionPhase	PhaseStartDate	4/24/2020	8/14/2020
tblConstructionPhase	PhaseStartDate	9/23/2022	5/20/2022
tblConstructionPhase	PhaseStartDate	6/5/2020	10/13/2020
tblGrading	MaterialImported	0.00	107,500.00
tblLandUse	LotAcreage	12.32	18.20
tblLandUse	LotAcreage	1.95	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	7.00	2.00
tblOffRoadEquipment	UsageHours	7.00	5.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	5.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	7.00	2.00
tblOffRoadEquipment	UsageHours	7.00	2.00
tblOffRoadEquipment	UsageHours	8.00	5.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblTripsAndVMT	HaulingTripNumber	2,472.00	0.00
tblTripsAndVMT	HaulingTripNumber	13,438.00	0.00
tblTripsAndVMT	VendorTripNumber	102.00	0.00
tblTripsAndVMT	VendorTripNumber	102.00	0.00

tblTripsAndVMT	WorkerTripNumber	35.00	0.00
tblTripsAndVMT	WorkerTripNumber	43.00	0.00
tblTripsAndVMT	WorkerTripNumber	48.00	0.00
tblTripsAndVMT	WorkerTripNumber	207.00	0.00
tblTripsAndVMT	WorkerTripNumber	207.00	0.00
tblTripsAndVMT	WorkerTripNumber	40.00	0.00
tblTripsAndVMT	WorkerTripNumber	41.00	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e	
Year	tons/yr											MT/yr					
2020	0.4362	4.7127	3.2837	6.5600e-003	0.4194	0.2146	0.6339	0.0572	0.1991	0.2562	0.0000	575.4446	575.4446	0.1718	0.0000	579.7398	
2021	0.5738	2.0639	2.0436	3.6300e-003	0.0000	0.1024	0.1024	0.0000	0.0976	0.0976	0.0000	313.4432	313.4432	0.0689	0.0000	315.1667	
2022	2.8584	3.5113	4.5555	7.2900e-003	0.0000	0.1722	0.1722	0.0000	0.1653	0.1653	0.0000	632.0427	632.0427	0.1345	0.0000	635.4048	
2023	1.5900e-003	0.0163	0.0207	3.0000e-005	0.0000	8.2000e-004	8.2000e-004	0.0000	7.5000e-004	7.5000e-004	0.0000	2.8501	2.8501	9.1000e-004	0.0000	2.8727	
Maximum	2.8584	4.7127	4.5555	7.2900e-003	0.4194	0.2146	0.6339	0.0572	0.1991	0.2562	0.0000	632.0427	632.0427	0.1718	0.0000	635.4048	

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e	
Year	tons/yr											MT/yr					
2020	0.1125	2.2067	4.0147	6.5600e-003	0.1887	0.0197	0.2085	0.0129	0.0197	0.0326	0.0000	575.4439	575.4439	0.1718	0.0000	579.7391	
2021	0.4204	1.4650	2.3433	3.6300e-003	0.0000	0.0221	0.0221	0.0000	0.0221	0.0221	0.0000	313.4428	313.4428	0.0689	0.0000	315.1664	
2022	2.6172	3.1696	4.9472	7.2900e-003	0.0000	0.0641	0.0641	0.0000	0.0641	0.0641	0.0000	632.0420	632.0420	0.1345	0.0000	635.4040	
2023	6.7000e-004	0.0151	0.0231	3.0000e-005	0.0000	3.7000e-004	3.7000e-004	0.0000	3.7000e-004	3.7000e-004	0.0000	2.8501	2.8501	9.1000e-004	0.0000	2.8727	
Maximum	2.6172	3.1696	4.9472	7.2900e-003	0.1887	0.0641	0.2085	0.0129	0.0641	0.0641	0.0000	632.0420	632.0420	0.1718	0.0000	635.4040	

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	18.59	33.46	-14.39	0.00	55.00	78.31	67.56	77.51	77.03	77.08	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	3-27-2020	6-26-2020	1.4566	0.6374
2	6-27-2020	9-26-2020	1.4730	0.6006
3	9-27-2020	12-26-2020	2.1342	1.0331
4	12-27-2020	3-26-2021	0.7633	0.4788
5	3-27-2021	6-26-2021	0.3446	0.2174
6	6-27-2021	9-26-2021	0.5264	0.3359
7	9-27-2021	12-26-2021	0.9601	0.7930

8	12-27-2021	3-26-2022	1.7123	1.5525
9	3-27-2022	6-26-2022	1.8026	1.6344
10	6-27-2022	9-26-2022	1.8847	1.7019
11	9-27-2022	12-26-2022	1.0833	0.9972
12	12-27-2022	3-26-2023	0.0246	0.0212
		Highest	2.1342	1.7019

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition and Sitework	Demolition	3/27/2020	6/25/2020	5	65	
2	Site Preparation/Grading/Soil Import.	Grading	8/14/2020	10/29/2020	5	55	gap between demo and site prep
3	Piles/Foundations/Utilities	Trenching	10/13/2020	2/8/2021	5	85	some overlap
4	Building Structures	Building Construction	1/28/2021	9/29/2021	5	175	some overlap
5	Building Exterior and Green Roof	Building Construction	7/26/2021	9/30/2022	5	310	overlap
6	Paving	Paving	5/20/2022	1/12/2023	5	170	
7	Building Interiors	Architectural Coating	11/17/2021	11/22/2022	5	265	overlap

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 805,125; Non-Residential Outdoor: 268,375; Striped Parking

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition and Sitework	Concrete/Industrial Saws	4	4.00	81	0.73
Demolition and Sitework	Crushing/Proc. Equipment	1	5.00	85	0.78
Demolition and Sitework	Excavators	3	6.00	158	0.38
Demolition and Sitework	Rubber Tired Dozers	2	6.00	247	0.40
Demolition and Sitework	Rubber Tired Loaders	2	6.00	203	0.36
Demolition and Sitework	Tractors/Loaders/Backhoes	2	5.00	97	0.37
Site Preparation/Grading/Soil Import	Excavators	2	7.00	158	0.38
Site Preparation/Grading/Soil Import	Graders	2	8.00	187	0.41
Site Preparation/Grading/Soil Import	Rollers	3	10.00	80	0.38
Site Preparation/Grading/Soil Import	Rubber Tired Dozers	0	10.00	247	0.40
Site Preparation/Grading/Soil Import	Rubber Tired Loaders	2	7.00	203	0.36
Site Preparation/Grading/Soil Import	Scrapers	4	8.00	367	0.48
Site Preparation/Grading/Soil Import	Skid Steer Loaders	2	10.00	65	0.37
Site Preparation/Grading/Soil Import	Sweepers/Scrubbers	1	10.00	64	0.46
Site Preparation/Grading/Soil Import	Tractors/Loaders/Backhoes	1	5.00	97	0.37
Piles/Foundations/Utilities	Bore/Drill Rigs	2	5.00	221	0.50
Piles/Foundations/Utilities	Cranes	2	5.00	231	0.29
Piles/Foundations/Utilities	Excavators	3	6.00	158	0.38
Piles/Foundations/Utilities	Forklifts	2	6.00	89	0.20
Piles/Foundations/Utilities	Other Construction Equipment	0	0.00	172	0.42
Piles/Foundations/Utilities	Pumps	2	2.00	84	0.74
Piles/Foundations/Utilities	Rubber Tired Loaders	2	6.00	203	0.36
Piles/Foundations/Utilities	Skid Steer Loaders	2	6.00	65	0.37

Piles/Foundations/Utilities	Sweepers/Scrubbers	2	6.00	64	0.46
Piles/Foundations/Utilities	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Building Structures	Cranes	2	2.00	231	0.29
Building Structures	Forklifts	2	2.00	89	0.20
Building Structures	Generator Sets	4	2.00	84	0.74
Building Structures	Other Construction Equipment	0	2.00	172	0.42
Building Structures	Pumps	1	3.00	84	0.74
Building Structures	Tractors/Loaders/Backhoes	1	2.00	97	0.37
Building Structures	Welders	4	2.00	46	0.45
Building Exterior and Green Roof	Aerial Lifts	4	4.00	63	0.31
Building Exterior and Green Roof	Cranes	1	5.00	231	0.29
Building Exterior and Green Roof	Forklifts	3	5.00	89	0.20
Building Exterior and Green Roof	Generator Sets	0	8.00	84	0.74
Building Exterior and Green Roof	Other Construction Equipment	0	7.00	172	0.42
Building Exterior and Green Roof	Skid Steer Loaders	2	2.00	65	0.37
Building Exterior and Green Roof	Tractors/Loaders/Backhoes	1	2.00	97	0.37
Building Exterior and Green Roof	Welders	0	8.00	46	0.45
Paving	Forklifts	2	2.00	89	0.20
Paving	Other Construction Equipment	0	8.00	172	0.42
Paving	Pavers	1	1.00	130	0.42
Paving	Paving Equipment	1	1.00	132	0.36
Paving	Plate Compactors	4	1.00	8	0.43
Paving	Rollers	3	1.00	80	0.38
Paving	Skid Steer Loaders	2	4.00	65	0.37
Paving	Surfacing Equipment	1	1.00	263	0.30
Paving	Sweepers/Scrubbers	2	2.00	64	0.46
Building Interiors	Aerial Lifts	10	7.00	63	0.31
Building Interiors	Air Compressors	8	6.00	78	0.48
Building Interiors	Cranes	1	1.00	231	0.29
Building Interiors	Forklifts	4	7.00	89	0.20
Building Interiors	Generator Sets	1	3.00	84	0.74
Building Interiors	Other Construction Equipment	0	7.00	172	0.42
Building Interiors	Welders	1	3.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition and Sitenework	14	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation/Grading/Sites	17	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Piles/Foundations/Utilities	19	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Structures	14	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Exterior and Green Roof	11	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	16	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Interiors	25	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use Soil Stabilizer

Replace Ground Cover

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition and Sitework - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2675	0.0000	0.2675	0.0405	0.0000	0.0405	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1357	1.3209	0.9408	1.7700e-003		0.0659	0.0659		0.0621	0.0621	0.0000	154.8073	154.8073	0.0379	0.0000	155.7554
Total	0.1357	1.3209	0.9408	1.7700e-003	0.2675	0.0659	0.3334	0.0405	0.0621	0.1026	0.0000	154.8073	154.8073	0.0379	0.0000	155.7554

Unmitigated Construction Off-Site

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1204	0.0000	0.1204	9.1100e-003	0.0000	9.1100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0294	0.6081	1.1046	1.7700e-003		2.7400e-003	2.7400e-003		2.7400e-003	2.7400e-003	0.0000	154.8071	154.8071	0.0379	0.0000	155.7552
Total	0.0294	0.6081	1.1046	1.7700e-003	0.1204	2.7400e-003	0.1231	9.1100e-003	2.7400e-003	0.0119	0.0000	154.8071	154.8071	0.0379	0.0000	155.7552

Mitigated Construction Off-Site

3.3 Site Preparation/Grading/Soil Import - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1519	0.0000	0.1519	0.0167	0.0000	0.0167	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2050	2.3728	1.5545	3.1300e-003		0.0998	0.0998		0.0918	0.0918	0.0000	275.3366	275.3366	0.0891	0.0000	277.5629
Total	0.2050	2.3728	1.5545	3.1300e-003	0.1519	0.0998	0.2517	0.0167	0.0918	0.1085	0.0000	275.3366	275.3366	0.0891	0.0000	277.5629

Unmitigated Construction Off-Site

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e	
Category	tons/yr											MT/yr					
Fugitive Dust					0.0684	0.0000	0.0684	3.7500e-003	0.0000	3.7500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Off-Road	0.0542	0.9968	1.8506	3.1300e-003		0.0100	0.0100		0.0100	0.0100	0.0000	275.3363	275.3363	0.0891	0.0000	277.5625	
Total	0.0542	0.9968	1.8506	3.1300e-003	0.0684	0.0100	0.0784	3.7500e-003	0.0100	0.0138	0.0000	275.3363	275.3363	0.0891	0.0000	277.5625	

Mitigated Construction Off-Site

3.4 Piles/Foundations/Utilities - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0955	1.0190	0.7885	1.6600e-003		0.0489	0.0489		0.0452	0.0452	0.0000	145.3007	145.3007	0.0448	0.0000	146.4215
Total	0.0955	1.0190	0.7885	1.6600e-003		0.0489	0.0489		0.0452	0.0452	0.0000	145.3007	145.3007	0.0448	0.0000	146.4215

Unmitigated Construction Off-Site

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0289	0.6019	1.0595	1.6600e-003		6.9600e-003	6.9600e-003		6.9600e-003	6.9600e-003	0.0000	145.3005	145.3005	0.0448	0.0000	146.4213
Total	0.0289	0.6019	1.0595	1.6600e-003		6.9600e-003	6.9600e-003		6.9600e-003	6.9600e-003	0.0000	145.3005	145.3005	0.0448	0.0000	146.4213

Mitigated Construction Off-Site

3.4 Piles/Foundations/Utilities - 2021

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	0.0404	0.4224	0.3625	7.7000e-004		0.0197	0.0197		0.0182	0.0182	0.0000	67.6799	67.6799	0.0209	0.0000	68.2015
Total	0.0404	0.4224	0.3625	7.7000e-004		0.0197	0.0197		0.0182	0.0182	0.0000	67.6799	67.6799	0.0209	0.0000	68.2015

Unmitigated Construction Off-Site

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0135	0.2802	0.4932	7.7000e-004	3.2400e-003	3.2400e-003	3.2400e-003	3.2400e-003	3.2400e-003	0.0000	67.6799	67.6799	0.0209	0.0000	68.2014	
Total	0.0135	0.2802	0.4932	7.7000e-004	3.2400e-003	3.2400e-003		3.2400e-003	3.2400e-003	0.0000	67.6799	67.6799	0.0209	0.0000	68.2014	

Mitigated Construction Off-Site

3.5 Building Structures - 2021

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	0.0981	0.8196	0.7828	1.4000e-003		0.0417	0.0417		0.0405	0.0405	0.0000	118.4933	118.4933	0.0167	0.0000	118.9104
Total	0.0981	0.8196	0.7828	1.4000e-003		0.0417	0.0417		0.0405	0.0405	0.0000	118.4933	118.4933	0.0167	0.0000	118.9104

Unmitigated Construction Off-Site

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0255	0.5533	0.8555	1.4000e-003	5.7800e-003	5.7800e-003	5.7800e-003	5.7800e-003	5.7800e-003	0.0000	118.4932	118.4932	0.0167	0.0000	118.9103	
Total	0.0255	0.5533	0.8555	1.4000e-003	5.7800e-003	5.7800e-003		5.7800e-003	5.7800e-003	0.0000	118.4932	118.4932	0.0167	0.0000	118.9103	

Mitigated Construction Off-Site

3.6 Building Exterior and Green Roof - 2021

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	0.0380	0.4266	0.3954	6.7000e-004		0.0202	0.0202		0.0186	0.0186	0.0000	58.8052	58.8052	0.0190	0.0000	59.2807
Total	0.0380	0.4266	0.3954	6.7000e-004		0.0202	0.0202		0.0186	0.0186	0.0000	58.8052	58.8052	0.0190	0.0000	59.2807

Unmitigated Construction Off-Site

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	tons/yr										MT/yr						
Off-Road	0.0143	0.2886	0.4610	6.7000e-004	6.4900e-003	6.4900e-003	6.4900e-003	6.4900e-003	6.4900e-003	0.0000	58.8052	58.8052	0.0190	0.0000	59.2806		
Total	0.0143	0.2886	0.4610	6.7000e-004	6.4900e-003	6.4900e-003		6.4900e-003	6.4900e-003	0.0000	58.8052	58.8052	0.0190	0.0000	59.2806		

Mitigated Construction Off-Site

3.6 Building Exterior and Green Roof - 2022

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	0.0579	0.6432	0.6617	1.1400e-003		0.0293	0.0293		0.0269	0.0269	0.0000	99.7343	99.7343	0.0323	0.0000	100.5407
Total	0.0579	0.6432	0.6617	1.1400e-003		0.0293	0.0293		0.0269	0.0269	0.0000	99.7343	99.7343	0.0323	0.0000	100.5407

Unmitigated Construction Off-Site

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	tons/yr										MT/yr						
Off-Road	0.0243	0.4894	0.7817	1.1400e-003		0.0110	0.0110		0.0110	0.0110	0.0000	99.7342	99.7342	0.0323	0.0000	100.5406	
Total	0.0243	0.4894	0.7817	1.1400e-003		0.0110	0.0110		0.0110	0.0110	0.0000	99.7342	99.7342	0.0323	0.0000	100.5406	

Mitigated Construction Off-Site

3.7 Paving - 2022

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	0.0303	0.3124	0.3708	5.9000e-004		0.0165	0.0165		0.0152	0.0152	0.0000	50.9800	50.9800	0.0162	0.0000	51.3853	
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Total	0.0303	0.3124	0.3708	5.9000e-004		0.0165	0.0165		0.0152	0.0152	0.0000	50.9800	50.9800	0.0162	0.0000	51.3853	

Unmitigated Construction Off-Site

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e	
Category	tons/yr											MT/yr					
Off-Road	0.0120	0.2695	0.4138	5.9000e-004		6.6500e-003	6.6500e-003		6.6500e-003	6.6500e-003	0.0000	50.9799	50.9799	0.0162	0.0000	51.3852	
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Total	0.0120	0.2695	0.4138	5.9000e-004		6.6500e-003	6.6500e-003		6.6500e-003	6.6500e-003	0.0000	50.9799	50.9799	0.0162	0.0000	51.3852	

Mitigated Construction Off-Site

3.7 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	tons/yr											MT/yr					
Off-Road	1.5900e-003	0.0163	0.0207	3.0000e-005		8.2000e-004	8.2000e-004		7.5000e-004	7.5000e-004	0.0000	2.8501	2.8501	9.1000e-004	0.0000	2.8727	
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Total	1.5900e-003	0.0163	0.0207	3.0000e-005		8.2000e-004	8.2000e-004		7.5000e-004	7.5000e-004	0.0000	2.8501	2.8501	9.1000e-004	0.0000	2.8727	

Unmitigated Construction Off-Site

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.7000e-004	0.0151	0.0231	3.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004	0.0000	2.8501	2.8501	9.1000e-004	0.0000	2.8727
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	6.7000e-004	0.0151	0.0231	3.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004	0.0000	2.8501	2.8501	9.1000e-004	0.0000	2.8727

Mitigated Construction Off-Site

3.8 Building Interiors - 2021

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	0.3507					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0467	0.3953	0.5028	7.9000e-004		0.0208	0.0208		0.0203	0.0203	0.0000	68.4647	68.4647	0.0124	0.0000	68.7741
Total	0.3975	0.3953	0.5028	7.9000e-004		0.0208	0.0208		0.0203	0.0203	0.0000	68.4647	68.4647	0.0124	0.0000	68.7741

Unmitigated Construction Off-Site

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3507				0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0164	0.3429	0.5337	7.9000e-004	6.6000e-003	6.6000e-003		6.6000e-003	6.6000e-003	0.0000	68.4646	68.4646	0.0124	0.0000	68.7740	
Total	0.3671	0.3429	0.5337	7.9000e-004	6.6000e-003	6.6000e-003		6.6000e-003	6.6000e-003	0.0000	68.4646	68.4646	0.0124	0.0000	68.7740	

Mitigated Construction Off-Site

3.8 Building Interiors - 2022

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	2.4658					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3043	2.5657	3.5229	5.5600e-003		0.1265	0.1265		0.1231	0.1231	0.0000	481.3284	481.3284	0.0860	0.0000	483.4788
Total	2.7702	2.5557	3.5229	5.5600e-003		0.1265	0.1265		0.1231	0.1231	0.0000	481.3284	481.3284	0.0860	0.0000	483.4788

Unmitigated Construction Off-Site

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.4658					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1151	2.4107	3.7518	5.5600e-003		0.0464	0.0464		0.0464	0.0464	0.0000	481.3279	481.3279	0.0860	0.0000	483.4782
Total	2.5809	2.4107	3.7518	5.5600e-003		0.0464	0.0464		0.0464	0.0464	0.0000	481.3279	481.3279	0.0860	0.0000	483.4782

Mitigated Construction Off-Site

18-072 100 Caribbean Construction - Santa Clara County, Annual

18-072 100 Caribbean Construction
Santa Clara County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	536.75	1000sqft	18.20	536,750.00	0
Parking Lot	85.00	1000sqft	0.00	85,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	58
Climate Zone	4			Operational Year	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity = 290

Land Use - Acres = 18.2

Construction Phase - Based on schedule provided using total workdays and start dates by phase

Off-road Equipment - Unit & hours changed according to client spreadsheet

Off-road Equipment - Based on provided construction list

Off-road Equipment - Based on provided construction list

Off-road Equipment - Based on provided construction list

Off-road Equipment - Based on provided equipment list

Off-road Equipment - Unit & hours changed according to client spreadsheet

Off-road Equipment - Based on provided construction list

Off-road Equipment - Based on provided equipment list

Trips and VMT - Computing trips with EMFAC2017

Demolition - Demo Volume = 18,000 tons Hauling + 7,000 ton pavement demo

Grading - Import 101,000 cy during grading and 6,500cy import on building exterior green roof

Construction Off-road Equipment Mitigation - Tier 4, All Equipment Mitigated

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterExposedAreaPM10PercentReduction	61	55
tblConstDustMitigation	WaterExposedAreaPM25PercentReduction	61	55
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	14.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	13.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstructionPhase	NumDays	20.00	265.00
tblConstructionPhase	NumDays	300.00	175.00
tblConstructionPhase	NumDays	300.00	310.00
tblConstructionPhase	NumDays	20.00	65.00
tblConstructionPhase	NumDays	30.00	55.00
tblConstructionPhase	NumDays	20.00	170.00
tblGrading	MaterialImported	0.00	107,500.00
tblLandUse	LotAcreage	12.32	18.20
tblLandUse	LotAcreage	1.95	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	7.00	2.00
tblOffRoadEquipment	UsageHours	7.00	5.00
tblOffRoadEquipment	UsageHours	8.00	6.00
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tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	5.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	7.00	2.00
tblOffRoadEquipment	UsageHours	7.00	2.00
tblOffRoadEquipment	UsageHours	8.00	5.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblTripsAndVMT	HaulingTripNumber	2,472.00	0.00
tblTripsAndVMT	HaulingTripNumber	13,438.00	0.00
tblTripsAndVMT	VendorTripNumber	102.00	0.00
tblTripsAndVMT	VendorTripNumber	102.00	0.00
tblTripsAndVMT	WorkerTripNumber	35.00	0.00
tblTripsAndVMT	WorkerTripNumber	43.00	0.00
tblTripsAndVMT	WorkerTripNumber	48.00	0.00
tblTripsAndVMT	WorkerTripNumber	207.00	0.00
tblTripsAndVMT	WorkerTripNumber	207.00	0.00
tblTripsAndVMT	WorkerTripNumber	41.00	0.00
tblTripsAndVMT	WorkerTripNumber	40.00	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Year	tons/yr												MT/yr				
2020	0.4362	4.7127	3.2837	6.5600e-003	0.4194	0.2146	0.6339	0.0572	0.1991	0.2562	0.0000	575.4446	575.4446	0.1718	0.0000	579.7398	
2021	0.5738	2.0639	2.0436	3.6300e-003	0.0000	0.1024	0.1024	0.0000	0.0976	0.0976	0.0000	313.4432	313.4432	0.0689	0.0000	315.1667	
2022	2.8584	3.5113	4.5555	7.2900e-003	0.0000	0.1722	0.1722	0.0000	0.1653	0.1653	0.0000	632.0427	632.0427	0.1345	0.0000	635.4048	
2023	1.5900e-003	0.0163	0.0207	3.0000e-005	0.0000	8.2000e-004	8.2000e-004	0.0000	7.5000e-004	7.5000e-004	0.0000	2.8501	2.8501	9.1000e-004	0.0000	2.8727	
Maximum	2.8584	4.7127	4.5555	7.2900e-003	0.4194	0.2146	0.6339	0.0572	0.1991	0.2562	0.0000	632.0427	632.0427	0.1718	0.0000	635.4048	

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Year	tons/yr												MT/yr				
2020	0.0846	0.5620	3.6965	6.5600e-003	0.1887	0.0106	0.1993	0.0129	0.0106	0.0234	0.0000	575.4439	575.4439	0.1718	0.0000	579.7391	
2021	0.4009	0.5616	2.2731	3.6300e-003	0.0000	5.4500e-003	5.4500e-003	0.0000	5.4500e-003	5.4500e-003	0.0000	313.4428	313.4428	0.0689	0.0000	315.1664	
2022	2.5783	1.6161	4.9059	7.2900e-003	0.0000	0.0109	0.0109	0.0000	0.0109	0.0109	0.0000	632.0420	632.0420	0.1345	0.0000	635.4040	
2023	5.7000e-004	9.3200e-003	0.0228	3.0000e-005	0.0000	5.0000e-005	5.0000e-005	0.0000	5.0000e-005	5.0000e-005	0.0000	2.8501	2.8501	9.1000e-004	0.0000	2.8727	
Maximum	2.5783	1.6161	4.9059	7.2900e-003	0.1887	0.0109	0.1993	0.0129	0.0109	0.0234	0.0000	632.0420	632.0420	0.1718	0.0000	635.4040	
	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Percent Reduction	20.82	73.32	-10.05	0.00	55.00	94.49	76.28	77.51	94.16	92.33	0.00	0.00	0.00	0.00	0.00	0.00	

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	3-27-2020	6-26-2020	1.4566	0.1096
2	6-27-2020	9-26-2020	1.4730	0.1857
3	9-27-2020	12-26-2020	2.1342	0.3351
4	12-27-2020	3-26-2021	0.7633	0.1526
5	3-27-2021	6-26-2021	0.3446	0.0598
6	6-27-2021	9-26-2021	0.5264	0.1285
7	9-27-2021	12-26-2021	0.9601	0.5593
8	12-27-2021	3-26-2022	1.7123	1.1289
9	3-27-2022	6-26-2022	1.8026	1.1838
10	6-27-2022	9-26-2022	1.8847	1.2262
11	9-27-2022	12-26-2022	1.0833	0.7286
12	12-27-2022	3-26-2023	0.0246	0.0133
		Highest	2.1342	1.2262

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description

1	Demolition and Sitework	Demolition	3/27/2020	6/25/2020	5	65	
2	Site Preparation/Grading/Soil Import	Grading	8/14/2020	10/29/2020	5	55	gap between demo and site prep
3	Piles/Foundations/Utilities	Trenching	10/13/2020	2/8/2021	5	85	some overlap
4	Building Structures	Building Construction	1/28/2021	9/29/2021	5	175	some overlap
5	Building Exterior and Green Roof	Building Construction	7/26/2021	9/30/2022	5	310	overlap
6	Building Interiors	Architectural Coating	11/17/2021	11/22/2022	5	265	overlap
7	Paving	Paving	5/20/2022	1/12/2023	5	170	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 805,125; Non-Residential Outdoor: 268,375; Striped Parking

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition and Sitework	Concrete/Industrial Saws	4	4.00	81	0.73
Demolition and Sitework	Crushing/Proc. Equipment	1	5.00	85	0.76
Demolition and Sitework	Excavators	3	6.00	158	0.38
Demolition and Sitework	Rubber Tired Dozers	2	6.00	247	0.40
Demolition and Sitework	Rubber Tired Loaders	2	6.00	203	0.36
Demolition and Sitework	Tractors/Loaders/Backhoes	2	5.00	97	0.37
Site Preparation/Grading/Soil Import	Excavators	2	7.00	158	0.38
Site Preparation/Grading/Soil Import	Graders	2	8.00	187	0.41
Site Preparation/Grading/Soil Import	Rollers	3	10.00	80	0.38
Site Preparation/Grading/Soil Import	Rubber Tired Dozers	0	10.00	247	0.40
Site Preparation/Grading/Soil Import	Rubber Tired Loaders	2	7.00	203	0.36
Site Preparation/Grading/Soil Import	Scrapers	4	8.00	367	0.48
Site Preparation/Grading/Soil Import	Skid Steer Loaders	2	10.00	65	0.37
Site Preparation/Grading/Soil Import	Sweepers/Scrubbers	1	10.00	64	0.46
Site Preparation/Grading/Soil Import	Tractors/Loaders/Backhoes	1	5.00	97	0.37
Piles/Foundations/Utilities	Bore/Drill Rigs	2	5.00	221	0.50
Piles/Foundations/Utilities	Cranes	2	5.00	231	0.29
Piles/Foundations/Utilities	Excavators	3	6.00	158	0.38
Piles/Foundations/Utilities	Forklifts	2	6.00	89	0.20
Piles/Foundations/Utilities	Other Construction Equipment	0	0.00	172	0.42
Piles/Foundations/Utilities	Pumps	2	2.00	84	0.74
Piles/Foundations/Utilities	Rubber Tired Loaders	2	6.00	203	0.36
Piles/Foundations/Utilities	Skid Steer Loaders	2	6.00	65	0.37
Piles/Foundations/Utilities	Sweepers/Scrubbers	2	6.00	64	0.46
Piles/Foundations/Utilities	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Building Structures	Cranes	2	2.00	231	0.29
Building Structures	Forklifts	2	2.00	89	0.20
Building Structures	Generator Sets	4	2.00	84	0.74
Building Structures	Other Construction Equipment	0	2.00	172	0.42
Building Structures	Pumps	1	3.00	84	0.74
Building Structures	Tractors/Loaders/Backhoes	1	2.00	97	0.37
Building Structures	Welders	4	2.00	46	0.45
Building Exterior and Green Roof	Aerial Lifts	4	4.00	63	0.31
Building Exterior and Green Roof	Cranes	1	5.00	231	0.29
Building Exterior and Green Roof	Forklifts	3	5.00	89	0.20

Building Exterior and Green Roof	Generator Sets	0	8.00	84	0.74
Building Exterior and Green Roof	Other Construction Equipment	0	7.00	172	0.42
Building Exterior and Green Roof	Skid Steer Loaders	2	2.00	65	0.37
Building Exterior and Green Roof	Tractors/Loaders/Backhoes	1	2.00	97	0.37
Building Exterior and Green Roof	Welders	0	8.00	46	0.45
Paving	Forklifts	2	2.00	89	0.20
Paving	Other Construction Equipment	0	8.00	172	0.42
Paving	Pavers	1	1.00	130	0.42
Paving	Paving Equipment	1	1.00	132	0.36
Paving	Plate Compactors	4	1.00	8	0.43
Paving	Rollers	3	1.00	80	0.38
Paving	Skid Steer Loaders	2	4.00	65	0.37
Paving	Surfacing Equipment	1	1.00	263	0.30
Paving	Sweepers/Scrubbers	2	2.00	64	0.46
Building Interiors	Aerial Lifts	10	7.00	63	0.31
Building Interiors	Air Compressors	8	6.00	78	0.48
Building Interiors	Cranes	1	1.00	231	0.29
Building Interiors	Forklifts	4	7.00	89	0.20
Building Interiors	Generator Sets	1	3.00	84	0.74
Building Interiors	Other Construction Equipment	0	7.00	172	0.42
Building Interiors	Welders	1	3.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition and Sitework	14	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Preparation/Grading/Sites/Piles/Foundations/Utilities	17	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Structures	19	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Exterior and Green Roof Paving	14	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Interiors	11	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
	16	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
	25	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use Soil Stabilizer

Replace Ground Cover

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition and Sitework - 2020

Unmitigated Construction On-Site

Off-Road	0.1357	1.3209	0.9408	1.7700e-003		0.0659	0.0659		0.0621	0.0621	0.0000	154.8073	154.8073	0.0379	0.0000	155.7554
Total	0.1357	1.3209	0.9408	1.7700e-003	0.2675	0.0659	0.3334	0.0405	0.0621	0.1026	0.0000	154.8073	154.8073	0.0379	0.0000	155.7554

Unmitigated Construction Off-Site

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1204	0.0000	0.1204	9.1100e-003	0.0000	9.1100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0206	0.0890	1.0455	1.7700e-003		2.7400e-003	2.7400e-003		2.7400e-003	2.7400e-003	0.0000	154.8071	154.8071	0.0379	0.0000	155.7552
Total	0.0206	0.0890	1.0455	1.7700e-003	0.1204	2.7400e-003	0.1231	9.1100e-003	2.7400e-003	0.0119	0.0000	154.8071	154.8071	0.0379	0.0000	155.7552

Mitigated Construction Off-Site

3.3 Site Preparation/Grading/Soil Import - 2020

Unmitigated Construction On-Site

Off-Road	0.2050	2.3728	1.5545	3.1300e-003		0.0998	0.0998		0.0918	0.0918	0.0000	275.3366	275.3366	0.0891	0.0000	277.5629
Total	0.2050	2.3728	1.5545	3.1300e-003	0.1519	0.0998	0.2517	0.0167	0.0918	0.1085	0.0000	275.3366	275.3366	0.0891	0.0000	277.5629

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	
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	
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0684	0.0000	0.0684	3.7500e-003	0.0000	3.7500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	
Off-Road	0.0414	0.2836	1.6593	3.1300e-003		5.1400e-003	5.1400e-003		5.1400e-003	5.1400e-003	0.0000	275.3363	275.3363	0.0891	0.0000	277.5625
Total	0.0414	0.2836	1.6593	3.1300e-003	0.0684	5.1400e-003	0.0735	3.7500e-003	5.1400e-003	8.8900e-003	0.0000	275.3363	275.3363	0.0891	0.0000	277.5625

Mitigated Construction Off-Site

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

3.4 Piles/Foundations/Utilities - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0955	1.0190	0.7885	1.6600e-003		0.0489	0.0489		0.0452	0.0452	0.0000	145.3007	145.3007	0.0448	0.0000	146.4215

Total	0.0955	1.0190	0.7885	1.6600e-003		0.0489	0.0489		0.0452	0.0452	0.0000	145.3007	145.3007	0.0448	0.0000	146.4215
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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	
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	
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0227	0.1893	0.9917	1.6600e-003		2.6900e-003	2.6900e-003		2.6900e-003	2.6900e-003	0.0000	145.3005	145.3005	0.0448	0.0000	146.4213
Total	0.0227	0.1893	0.9917	1.6600e-003		2.6900e-003	2.6900e-003		2.6900e-003	2.6900e-003	0.0000	145.3005	145.3005	0.0448	0.0000	146.4213

Mitigated Construction Off-Site

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

3.4 Piles/Foundations/Utilities - 2021

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	0.0404	0.4224	0.3625	7.7000e-004		0.0197	0.0197		0.0182	0.0182	0.0000	67.6799	67.6799	0.0209	0.0000	68.2015

Total	0.0404	0.4224	0.3625	7.7000e-004		0.0197	0.0197		0.0182	0.0182	0.0000	67.6799	67.6799	0.0209	0.0000	68.2015
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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	
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	
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0106	0.0881	0.4617	7.7000e-004	1.2500e-003	1.2500e-003	1.2500e-003	1.2500e-003	1.2500e-003	0.0000	67.6799	67.6799	0.0209	0.0000	68.2014	
Total	0.0106	0.0881	0.4617	7.7000e-004	1.2500e-003	1.2500e-003	1.2500e-003	1.2500e-003	1.2500e-003	0.0000	67.6799	67.6799	0.0209	0.0000	68.2014	

Mitigated Construction Off-Site

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

3.5 Building Structures - 2021

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	0.0981	0.8196	0.7828	1.4000e-003	0.0417	0.0417	0.0417	0.0405	0.0405	0.0000	118.4933	118.4933	0.0167	0.0000	118.9104	

Total	0.0981	0.8196	0.7828	1.4000e-003		0.0417	0.0417		0.0405	0.0405	0.0000	118.4933	118.4933	0.0167	0.0000	118.9104
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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	
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	
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0165	0.1428	0.8348	1.4000e-003		1.9400e-003	1.9400e-003		1.9400e-003	1.9400e-003	0.0000	118.4932	118.4932	0.0167	0.0000	118.9103
Total	0.0165	0.1428	0.8348	1.4000e-003		1.9400e-003	1.9400e-003		1.9400e-003	1.9400e-003	0.0000	118.4932	118.4932	0.0167	0.0000	118.9103

Mitigated Construction Off-Site

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

3.6 Building Exterior and Green Roof - 2021

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	0.0380	0.4266	0.3954	6.7000e-004		0.0202	0.0202		0.0186	0.0186	0.0000	58.8052	58.8052	0.0190	0.0000	59.2807

Total	0.0380	0.4266	0.3954	6.7000e-004		0.0202	0.0202		0.0186	0.0186	0.0000	58.8052	58.8052	0.0190	0.0000	59.2807
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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	
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	
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0113	0.1642	0.4440	6.7000e-004		1.1000e-003	1.1000e-003		1.1000e-003	1.1000e-003	0.0000	58.8052	58.8052	0.0190	0.0000	59.2806
Total	0.0113	0.1642	0.4440	6.7000e-004		1.1000e-003	1.1000e-003		1.1000e-003	1.1000e-003	0.0000	58.8052	58.8052	0.0190	0.0000	59.2806

Mitigated Construction Off-Site

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

3.6 Building Exterior and Green Roof - 2022

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	0.0579	0.6432	0.6617	1.1400e-003		0.0293	0.0293		0.0269	0.0269	0.0000	99.7343	99.7343	0.0323	0.0000	100.5407

Total	0.0579	0.6432	0.6617	1.1400e-003		0.0293	0.0293		0.0269	0.0269	0.0000	99.7343	99.7343	0.0323	0.0000	100.5407
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Unmitigated Construction Off-Site

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e	
Category	tons/yr											MT/yr					
Off-Road	0.0192	0.2784	0.7529	1.1400e-003		1.8600e-003	1.8600e-003		1.8600e-003	1.8600e-003	0.0000	99.7342	99.7342	0.0323	0.0000	100.5406	
Total	0.0192	0.2784	0.7529	1.1400e-003		1.8600e-003	1.8600e-003		1.8600e-003	1.8600e-003	0.0000	99.7342	99.7342	0.0323	0.0000	100.5406	

Mitigated Construction Off-Site

3.7 Building Interiors - 2021

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	0.3507						0.0000	0.0000		0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	

Off-Road	0.0467	0.3953	0.5028	7.9000e-004		0.0208	0.0208		0.0203	0.0203	0.0000	68.4647	68.4647	0.0124	0.0000	68.7741
Total	0.3975	0.3953	0.5028	7.9000e-004		0.0208	0.0208		0.0203	0.0203	0.0000	68.4647	68.4647	0.0124	0.0000	68.7741

Unmitigated Construction Off-Site

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3507					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0118	0.1666	0.5327	7.9000e-004		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003	0.0000	68.4646	68.4646	0.0124	0.0000	68.7740
Total	0.3625	0.1666	0.5327	7.9000e-004		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003	0.0000	68.4646	68.4646	0.0124	0.0000	68.7740

Mitigated Construction Off-Site

3.7 Building Interiors - 2022

Unmitigated Construction On-Site

Off-Road	0.3043	2.5557	3.5229	5.5600e-003		0.1265	0.1265		0.1231	0.1231	0.0000	481.3284	481.3284	0.0860	0.0000	483.4788
Total	2.7702	2.5557	3.5229	5.5600e-003		0.1265	0.1265		0.1231	0.1231	0.0000	481.3284	481.3284	0.0860	0.0000	483.4788

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	
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	
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.4658					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Off-Road	0.0830	1.1711	3.7449	5.5600e-003		8.1400e-003	8.1400e-003		8.1400e-003	8.1400e-003	0.0000	481.3279	481.3279	0.0860	0.0000	483.4782
Total	2.5488	1.1711	3.7449	5.5600e-003		8.1400e-003	8.1400e-003		8.1400e-003	8.1400e-003	0.0000	481.3279	481.3279	0.0860	0.0000	483.4782

Mitigated Construction Off-Site

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

3.8 Paving - 2022

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	0.0303	0.3124	0.3708	5.9000e-004		0.0165	0.0165		0.0152	0.0152	0.0000	50.9800	50.9800	0.0162	0.0000	51.3853

Paving	0.0000				0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0303	0.3124	0.3708	5.9000e-004		0.0165	0.0165		0.0152	0.0152	0.0000	50.9800	50.9800	0.0162	0.0000	51.3853	

Unmitigated Construction Off-Site

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

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0103	0.1667	0.4082	5.9000e-004		9.3000e-004	9.3000e-004		9.3000e-004	9.3000e-004	0.0000	50.9799	50.9799	0.0162	0.0000	51.3852
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0103	0.1667	0.4082	5.9000e-004		9.3000e-004	9.3000e-004		9.3000e-004	9.3000e-004	0.0000	50.9799	50.9799	0.0162	0.0000	51.3852

Mitigated Construction Off-Site

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

3.8 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5900e-003	0.0163	0.0207	3.0000e-005		8.2000e-004	8.2000e-004		7.5000e-004	7.5000e-004	0.0000	2.8501	2.8501	9.1000e-004	0.0000	2.8727

Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	1.5900e-003	0.0163	0.0207	3.0000e-005		8.2000e-004	8.2000e-004		7.5000e-004	7.5000e-004	0.0000	2.8501	2.8501	9.1000e-004	0.0000	2.8727	

Unmitigated Construction Off-Site

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e	
Category	tons/yr											MT/yr					
Off-Road	5.7000e-004	9.3200e-003	0.0228	3.0000e-005		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	2.8501	2.8501	9.1000e-004	0.0000	2.8727	
Paving	0.0000				0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Total	5.7000e-004	9.3200e-003	0.0228	3.0000e-005		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	2.8501	2.8501	9.1000e-004	0.0000	2.8727	

Mitigated Construction Off-Site

18-072 200 Caribbean Construction - Santa Clara County, Annual

18-072 200 Caribbean Construction
Santa Clara County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	505.14	1000sqft	26.70	505,140.00	0
General Light Industry	0.10	1000sqft	0.00	100.00	0
Parking Lot	201.40	1000sqft	0.00	201,400.00	0
Unenclosed Parking with Elevator	1,235.00	Space	0.00	376,145.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	58
Climate Zone	4			Operational Year	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity	290	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity = 290

Land Use - Parking garage = 379,145 SF - acreage assigned to office

Construction Phase - Total Days altered to match Construction spreadsheet filled out by client

Off-road Equipment - Unit & hours changed according to client spreadsheet

Off-road Equipment - Based on provided equipment list

Off-road Equipment - Based on provided equipment list

Off-road Equipment - Based on provided equipment list - appears cranes, forklifts and pump double counted

Off-road Equipment - Based on Provided Equipment list

Off-road Equipment - Based on provided equipment list

Off-road Equipment -

Off-road Equipment - Unit & hours changed according to client spreadsheet

Trips and VMT - Calculated using EMFAC

Demolition - Demo Volume = 24,000 tons Hauling + 8,000 ton pavement demo

Grading - Import 156,000 cy during grading and 6,500cy import on building exterior green roof =162,500 export 15,000

Construction Off-road Equipment Mitigation - Tier 4interim, All Equipment Mitigated

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterExposedAreaPM10PercentReduction	61	55
tblConstDustMitigation	WaterExposedAreaPM25PercentReduction	61	55
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	14.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
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tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
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tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	35.00	240.00
tblConstructionPhase	NumDays	440.00	175.00
tblConstructionPhase	NumDays	440.00	270.00
tblConstructionPhase	NumDays	30.00	85.00
tblConstructionPhase	NumDays	45.00	55.00
tblConstructionPhase	NumDays	35.00	170.00
tblGrading	MaterialExported	0.00	15,000.00
tblGrading	MaterialImported	0.00	162,500.00
tblLandUse	LandUseSquareFeet	494,000.00	376,145.00
tblLandUse	LotAcreage	11.60	26.70
tblLandUse	LotAcreage	4.62	0.00
tblLandUse	LotAcreage	11.11	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	7.00	2.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	7.00	2.00
tblOffRoadEquipment	UsageHours	7.00	2.00
tblOffRoadEquipment	UsageHours	8.00	5.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblTripsAndVMT	HaulingTripNumber	3,164.00	0.00
tblTripsAndVMT	HaulingTripNumber	22,188.00	0.00
tblTripsAndVMT	VendorTripNumber	177.00	0.00
tblTripsAndVMT	VendorTripNumber	177.00	0.00
tblTripsAndVMT	WorkerTripNumber	35.00	0.00
tblTripsAndVMT	WorkerTripNumber	43.00	0.00
tblTripsAndVMT	WorkerTripNumber	43.00	0.00
tblTripsAndVMT	WorkerTripNumber	404.00	0.00
tblTripsAndVMT	WorkerTripNumber	404.00	0.00
tblTripsAndVMT	WorkerTripNumber	81.00	0.00
tblTripsAndVMT	WorkerTripNumber	40.00	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.5399	5.6809	4.0192	8.0400e-003	0.4837	0.2641	0.7478	0.0675	0.2460	0.3136	0.0000	703.0814	703.0814	0.2017	0.0000	708.1244
2021	1.2263	1.7486	1.6131	2.8100e-003	0.0000	0.0879	0.0879	0.0000	0.0831	0.0831	0.0000	242.1203	242.1203	0.0565	0.0000	243.5327
2022	1.8162	1.0559	1.1262	1.8600e-003	0.0000	0.0534	0.0534	0.0000	0.0497	0.0497	0.0000	161.7845	161.7845	0.0466	0.0000	162.9496
Maximum	1.8162	5.6809	4.0192	8.0400e-003	0.4837	0.2641	0.7478	0.0675	0.2460	0.3136	0.0000	703.0814	703.0814	0.2017	0.0000	708.1244

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.1376	2.7541	4.9410	8.0400e-003	0.2177	0.0253	0.2430	0.0152	0.0253	0.0405	0.0000	703.0806	703.0806	0.2017	0.0000	708.1235
2021	1.1000	1.1395	1.8197	2.8100e-003	0.0000	0.0173	0.0173	0.0000	0.0173	0.0173	0.0000	242.1200	242.1200	0.0565	0.0000	243.5324
2022	1.7485	0.8066	1.2710	1.8600e-003	0.0000	0.0156	0.0156	0.0000	0.0156	0.0156	0.0000	161.7843	161.7843	0.0466	0.0000	162.9494
Maximum	1.7485	2.7541	4.9410	8.0400e-003	0.2177	0.0253	0.2430	0.0152	0.0253	0.0405	0.0000	703.0806	703.0806	0.2017	0.0000	708.1235

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	16.65	44.61	-18.84	0.00	55.00	85.64	68.97	77.51	84.62	83.54	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2020	3-31-2020	1.4566	0.6374
2	4-1-2020	6-30-2020	1.5715	0.6602
3	7-1-2020	9-30-2020	1.9477	0.9024
4	10-1-2020	12-31-2020	1.2384	0.6881
5	1-1-2021	3-31-2021	0.4437	0.2667
6	4-1-2021	6-30-2021	0.5986	0.3698
7	7-1-2021	9-30-2021	0.6728	0.5328
8	10-1-2021	12-31-2021	1.2576	1.0672
9	1-1-2022	3-31-2022	1.3015	1.1452
10	4-1-2022	6-30-2022	1.1963	1.0714
11	7-1-2022	9-30-2022	0.3789	0.3424
	Highest		1.9477	1.1452

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition of Existing Buildings and Sitework	Demolition	1/1/2020	4/28/2020	5	85	
2	Site Preparation/Grading	Grading	5/26/2020	8/10/2020	5	55	

3	Piles/Foundations/Utilities	Trenching	7/28/2020	12/21/2020	5	105	
4	Building Structures	Building Construction	10/20/2020	6/21/2021	5	175	
5	Building Exterior and Green Roofs	Building Construction	5/5/2021	5/17/2022	5	270	
6	Building Interiors	Architectural Coating	8/27/2021	7/28/2022	5	240	
7	Paving/Site Work	Paving	1/10/2022	9/2/2022	5	170	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 757,860; Non-Residential Outdoor: 252,620; Striped Parking

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition of Existing Buildings and Sitework	Concrete/Industrial Saws	4	4.00	81	0.73
Demolition of Existing Buildings and Sitework	Crushing/Proc. Equipment	1	5.00	85	0.78
Demolition of Existing Buildings and Sitework	Excavators	3	6.00	158	0.38
Demolition of Existing Buildings and Sitework	Rubber Tired Dozers	2	6.00	247	0.40
Demolition of Existing Buildings and Sitework	Rubber Tired Loaders	2	6.00	203	0.36
Demolition of Existing Buildings and Sitework	Tractors/Loaders/Backhoes	2	5.00	97	0.37
Site Preparation/Grading	Excavators	2	7.00	158	0.38
Site Preparation/Grading	Graders	2	8.00	187	0.41
Site Preparation/Grading	Rollers	3	10.00	80	0.38
Site Preparation/Grading	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation/Grading	Rubber Tired Loaders	2	7.00	203	0.36
Site Preparation/Grading	Scrapers	4	7.00	367	0.48
Site Preparation/Grading	Skid Steer Loaders	2	10.00	65	0.37
Site Preparation/Grading	Sweepers/Scrubbers	1	10.00	64	0.46
Site Preparation/Grading	Tractors/Loaders/Backhoes	1	5.00	97	0.37
Building Structures	Cranes	3	2.00	231	0.29
Building Structures	Forklifts	4	2.00	89	0.20
Building Structures	Generator Sets	4	2.00	84	0.74
Building Structures	Pumps	2	3.00	84	0.74
Building Structures	Tractors/Loaders/Backhoes	1	2.00	97	0.37
Building Structures	Welders	4	2.00	46	0.45
Building Exterior and Green Roofs	Aerial Lifts	4	5.00	63	0.31
Building Exterior and Green Roofs	Cranes	1	6.00	231	0.29
Building Exterior and Green Roofs	Forklifts	3	6.00	89	0.20
Building Exterior and Green Roofs	Generator Sets	0	8.00	84	0.74
Building Exterior and Green Roofs	Skid Steer Loaders	2	2.00	65	0.37
Building Exterior and Green Roofs	Tractors/Loaders/Backhoes	1	2.00	97	0.37
Building Exterior and Green Roofs	Welders	0	8.00	46	0.45
Paving/Site Work	Forklifts	2	2.00	89	0.20
Paving/Site Work	Pavers	1	1.00	130	0.42
Paving/Site Work	Paving Equipment	1	1.00	132	0.36
Paving/Site Work	Plate Compactors	4	1.00	8	0.43
Paving/Site Work	Rollers	3	1.00	80	0.38
Paving/Site Work	Skid Steer Loaders	2	4.00	65	0.37
Paving/Site Work	Surfacing Equipment	1	1.00	263	0.30
Paving/Site Work	Sweepers/Scrubbers	2	2.00	64	0.46
Building Interiors	Aerial Lifts	0	6.00	63	0.31

Building Interiors	Air Compressors	0	8.00	78	0.48
Building Interiors	Cranes	1	2.00	231	0.29
Building Interiors	Forklifts	3	5.00	89	0.20
Building Interiors	Generator Sets	1	3.00	84	0.74
Building Interiors	Welders	1	3.00	46	0.45
Piles/Foundations/Utilities	Bore/Drill Rigs	2	4.00	221	0.50
Piles/Foundations/Utilities	Cranes	2	4.00	231	0.29
Piles/Foundations/Utilities	Excavators	3	5.00	158	0.38
Piles/Foundations/Utilities	Forklifts	2	7.00	89	0.20
Piles/Foundations/Utilities	Pumps	2	1.00	84	0.74
Piles/Foundations/Utilities	Rubber Tired Loaders	2	5.00	203	0.36
Piles/Foundations/Utilities	Skid Steer Loaders	2	5.00	65	0.37
Piles/Foundations/Utilities	Sweepers/Scrubbers	2	5.00	64	0.46

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition of Existing Buildings, and Sitework	14	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation/Grading	17	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Structures	18	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Exterior and Green Roofs	11	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving/Site Work	16	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Interiors	6	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Piles/Foundations/Utilities	17	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use Soil Stabilizer

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition of Existing Buildings and Sitework - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3424	0.0000	0.3424	0.0518	0.0000	0.0518	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1775	1.7274	1.2302	2.3200e-003		0.0862	0.0862		0.0812	0.0812	0.0000	202.4403	202.4403	0.0496	0.0000	203.6801
Total	0.1775	1.7274	1.2302	2.3200e-003	0.3424	0.0862	0.4286	0.0518	0.0812	0.1330	0.0000	202.4403	202.4403	0.0496	0.0000	203.6801

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
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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1541	0.0000	0.1541	0.0117	0.0000	0.0117	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0384	0.7951	1.4445	2.3200e-003		3.5800e-003	3.5800e-003		3.5800e-003	3.5800e-003	0.0000	202.4401	202.4401	0.0496	0.0000	203.6799
Total	0.0384	0.7951	1.4445	2.3200e-003	0.1541	3.5800e-003	0.1577	0.0117	3.5800e-003	0.0152	0.0000	202.4401	202.4401	0.0496	0.0000	203.6799

Mitigated Construction Off-Site

3.3 Site Preparation/Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1413	0.0000	0.1413	0.0157	0.0000	0.0157	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1914	2.2112	1.4520	2.9300e-003		0.0935	0.0935		0.0860	0.0860	0.0000	257.0374	257.0374	0.0831	0.0000	259.1157
Total	0.1914	2.2112	1.4520	2.9300e-003	0.1413	0.0935	0.2347	0.0157	0.0860	0.1017	0.0000	257.0374	257.0374	0.0831	0.0000	259.1157

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
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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0636	0.0000	0.0636	3.5300e-003	0.0000	3.5300e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0508	0.9417	1.7395	2.9300e-003		9.6900e-003	9.6900e-003		9.6900e-003	9.6900e-003	0.0000	257.0371	257.0371	0.0831	0.0000	259.1154
Total	0.0508	0.9417	1.7395	2.9300e-003	0.0636	9.6900e-003	0.0733	3.5300e-003	9.6900e-003	0.0132	0.0000	257.0371	257.0371	0.0831	0.0000	259.1154

Mitigated Construction Off-Site

3.4 Piles/Foundations/Utilities - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1288	1.3828	1.0288	2.2400e-003		0.0650	0.0650		0.0600	0.0600	0.0000	196.9629	196.9629	0.0618	0.0000	198.5065
Total	0.1288	1.3828	1.0288	2.2400e-003		0.0650	0.0650		0.0600	0.0600	0.0000	196.9629	196.9629	0.0618	0.0000	198.5065

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
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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0384	0.8074	1.4219	2.2400e-003		0.0101	0.0101		0.0101	0.0101	0.0000	196.9626	196.9626	0.0618	0.0000	198.5063
Total	0.0384	0.8074	1.4219	2.2400e-003		0.0101	0.0101		0.0101	0.0101	0.0000	196.9626	196.9626	0.0618	0.0000	198.5063

Mitigated Construction Off-Site

3.5 Building Structures - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0423	0.3595	0.3082	5.5000e-004		0.0195	0.0195		0.0189	0.0189	0.0000	46.6409	46.6409	7.2500e-003	0.0000	46.8220
Total	0.0423	0.3595	0.3082	5.5000e-004		0.0195	0.0195		0.0189	0.0189	0.0000	46.6409	46.6409	7.2500e-003	0.0000	46.8220

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
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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e	
Category	tons/yr										MT/yr						
Off-Road	0.0100	0.2099	0.3351	5.5000e-004		1.9300e-003	1.9300e-003		1.9300e-003	1.9300e-003	0.0000	46.6408	46.6408	7.2500e-003	0.0000	46.8220	
Total	0.0100	0.2099	0.3351	5.5000e-004		1.9300e-003	1.9300e-003		1.9300e-003	1.9300e-003	0.0000	46.6408	46.6408	7.2500e-003	0.0000	46.8220	

Mitigated Construction Off-Site

3.5 Building Structures - 2021

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	0.0873	0.7547	0.6972	1.2600e-003		0.0387	0.0387		0.0374	0.0374	0.0000	107.3617	107.3617	0.0162	0.0000	107.7657
Total	0.0873	0.7547	0.6972	1.2600e-003		0.0387	0.0387		0.0374	0.0374	0.0000	107.3617	107.3617	0.0162	0.0000	107.7657

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
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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0230	0.4831	0.7714	1.2600e-003		4.4500e-003	4.4500e-003		4.4500e-003	4.4500e-003	0.0000	107.3616	107.3616	0.0162	0.0000	107.7656
Total	0.0230	0.4831	0.7714	1.2600e-003		4.4500e-003	4.4500e-003		4.4500e-003	4.4500e-003	0.0000	107.3616	107.3616	0.0162	0.0000	107.7656

Mitigated Construction Off-Site

3.6 Building Exterior and Green Roofs - 2021

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	0.0674	0.7584	0.7015	1.1900e-003		0.0357	0.0357		0.0329	0.0329	0.0000	104.6807	104.6807	0.0339	0.0000	105.5271
Total	0.0674	0.7584	0.7015	1.1900e-003		0.0357	0.0357		0.0329	0.0329	0.0000	104.6807	104.6807	0.0339	0.0000	105.5271

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
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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0255	0.5133	0.8195	1.1900e-003		0.0116	0.0116		0.0116	0.0116	0.0000	104.6806	104.6806	0.0339	0.0000	105.5270
Total	0.0255	0.5133	0.8195	1.1900e-003		0.0116	0.0116		0.0116	0.0116	0.0000	104.6806	104.6806	0.0339	0.0000	105.5270

Mitigated Construction Off-Site

3.6 Building Exterior and Green Roofs - 2022

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	0.0340	0.3781	0.3882	6.7000e-004		0.0171	0.0171		0.0158	0.0158	0.0000	58.7048	58.7048	0.0190	0.0000	59.1795	
Total	0.0340	0.3781	0.3882	6.7000e-004		0.0171	0.0171		0.0158	0.0158	0.0000	58.7048	58.7048	0.0190	0.0000	59.1795	

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
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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e	
Category	tons/yr										MT/yr						
Off-Road	0.0143	0.2878	0.4595	6.7000e-004		6.5100e-003	6.5100e-003		6.5100e-003	6.5100e-003	0.0000	58.7048	58.7048	0.0190	0.0000	59.1794	
Total	0.0143	0.2878	0.4595	6.7000e-004		6.5100e-003	6.5100e-003		6.5100e-003	6.5100e-003	0.0000	58.7048	58.7048	0.0190	0.0000	59.1794	

Mitigated Construction Off-Site

3.7 Building Interiors - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.0446					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0270	0.2355	0.2144	3.5000e-004		0.0135	0.0135		0.0128	0.0128	0.0000	30.0779	30.0779	6.4800e-003	0.0000	30.2399
Total	1.0716	0.2355	0.2144	3.5000e-004		0.0135	0.0135		0.0128	0.0128	0.0000	30.0779	30.0779	6.4800e-003	0.0000	30.2399

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
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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.0446						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.8300e-003	0.1430	0.2288	3.5000e-004		1.2700e-003	1.2700e-003		1.2700e-003	1.2700e-003	0.0000	30.0778	30.0778	6.4800e-003	0.0000	30.2398
Total	1.0514	0.1430	0.2288	3.5000e-004		1.2700e-003	1.2700e-003		1.2700e-003	1.2700e-003	0.0000	30.0778	30.0778	6.4800e-003	0.0000	30.2398

Mitigated Construction Off-Site

3.7 Building Interiors - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.7104					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0398	0.3480	0.3465	5.8000e-004		0.0189	0.0189		0.0179	0.0179	0.0000	49.2499	49.2499	0.0105	0.0000	49.5124
Total	1.7502	0.3480	0.3465	5.8000e-004		0.0189	0.0189		0.0179	0.0179	0.0000	49.2499	49.2499	0.0105	0.0000	49.5124

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
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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.7104					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0112	0.2342	0.3746	5.8000e-004		2.0800e-003	2.0800e-003		2.0800e-003	2.0800e-003	0.0000	49.2498	49.2498	0.0105	0.0000	49.5123
Total	1.7216	0.2342	0.3746	5.8000e-004		2.0800e-003	2.0800e-003		2.0800e-003	2.0800e-003	0.0000	49.2498	49.2498	0.0105	0.0000	49.5123

Mitigated Construction Off-Site

3.8 Paving/Site Work - 2022

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	0.0320	0.3299	0.3915	6.2000e-004		0.0174	0.0174		0.0161	0.0161	0.0000	53.8298	53.8298	0.0171	0.0000	54.2577
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0320	0.3299	0.3915	6.2000e-004		0.0174	0.0174		0.0161	0.0161	0.0000	53.8298	53.8298	0.0171	0.0000	54.2577

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
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Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	tons/yr											MT/yr					
Off-Road	0.0127	0.2846	0.4369	6.2000e-004		7.0200e-003	7.0200e-003		7.0200e-003	7.0200e-003	0.0000	53.8297	53.8297	0.0171	0.0000	54.2577	
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Total	0.0127	0.2846	0.4369	6.2000e-004		7.0200e-003	7.0200e-003		7.0200e-003	7.0200e-003	0.0000	53.8297	53.8297	0.0171	0.0000	54.2577	

Mitigated Construction Off-Site

18-072 200 Caribbean Construction - Santa Clara County, Annual

18-072 200 Caribbean Construction
Santa Clara County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	505.14	1000sqft	26.70	505,140.00	0
General Light Industry	0.10	1000sqft	0.00	100.00	0
Parking Lot	201.40	1000sqft	0.00	201,400.00	0
Unenclosed Parking with Elevator	1,235.00	Space	0.00	376,145.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	58
Climate Zone	4			Operational Year	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity = 290

Land Use - Parking garage = 379,145 SF - acreage assigned to office

Construction Phase - Total Days altered to match Construction spreadsheet filled out by client

Off-road Equipment - Unit & hours changed according to client spreadsheet

Off-road Equipment - Based on provided equipment list

Off-road Equipment - Based on provided equipment list

Off-road Equipment - Based on provided equipment list - appears cranes, forklifts and pump double counted

Off-road Equipment - Based on Provided Equipment list

Off-road Equipment - Based on provided equipment list

Off-road Equipment - Unit & hours changed according to client spreadsheet

Trips and VMT - Calculated using EMFAC

Demolition - Demo Volume = 24,000 tons Hauling + 8,000 ton pavement demo

Grading - Import 156,000 cy during grading and 6,500cy import on building exterior green roof =162,500 export 15,000

Construction Off-road Equipment Mitigation - Tier 4interim, All Equipment Mitigated

Off-road Equipment -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterExposedAreaPM10PercentReduction	61	55
tblConstDustMitigation	WaterExposedAreaPM25PercentReduction	61	55
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
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tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	14.00

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tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
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tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstructionPhase	NumDays	45.00	55.00
tblConstructionPhase	NumDays	35.00	170.00
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tblConstructionPhase	PhaseEndDate	12/21/2021	6/21/2021
tblConstructionPhase	PhaseEndDate	8/29/2023	5/17/2022
tblConstructionPhase	PhaseEndDate	2/11/2020	4/28/2020
tblConstructionPhase	PhaseEndDate	4/14/2020	8/10/2020
tblConstructionPhase	PhaseEndDate	10/17/2023	9/2/2022

tblConstructionPhase	PhaseStartDate	10/18/2023	8/27/2021
tblConstructionPhase	PhaseStartDate	4/15/2020	10/20/2020
tblConstructionPhase	PhaseStartDate	12/22/2021	5/5/2021
tblConstructionPhase	PhaseStartDate	2/12/2020	5/26/2020
tblConstructionPhase	PhaseStartDate	8/30/2023	1/10/2022
tblGrading	MaterialExported	0.00	15,000.00
tblGrading	MaterialImported	0.00	162,500.00
tblLandUse	LandUseSquareFeet	494,000.00	376,145.00
tblLandUse	LotAcreage	11.60	26.70
tblLandUse	LotAcreage	4.62	0.00
tblLandUse	LotAcreage	11.11	0.00
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tblOffRoadEquipment	OffRoadEquipmentType		Sweepers/Scrubbers
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tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Aerial Lifts
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType		Surfacing Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Sweepers/Scrubbers
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
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tblOffRoadEquipment	OffRoadEquipmentType		Aerial Lifts
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts

tblOffRoadEquipment	OffRoadEquipmentType		Cranes
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentType		Bore/Drill Rigs
tblOffRoadEquipment	OffRoadEquipmentType		Cranes
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Sweepers/Scrubbers
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tblOffRoadEquipment	UsageHours	7.00	2.00
tblOffRoadEquipment	UsageHours	8.00	5.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblTripsAndVMT	HaulingTripNumber	3,164.00	0.00
tblTripsAndVMT	HaulingTripNumber	22,188.00	0.00
tblTripsAndVMT	VendorTripNumber	177.00	0.00

tblTripsAndVMT	VendorTripNumber	177.00	0.00
tblTripsAndVMT	WorkerTripNumber	35.00	0.00
tblTripsAndVMT	WorkerTripNumber	43.00	0.00
tblTripsAndVMT	WorkerTripNumber	43.00	0.00
tblTripsAndVMT	WorkerTripNumber	404.00	0.00
tblTripsAndVMT	WorkerTripNumber	404.00	0.00
tblTripsAndVMT	WorkerTripNumber	40.00	0.00
tblTripsAndVMT	WorkerTripNumber	81.00	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.5397	5.6796	4.0170	8.0400e-003	0.4837	0.2639	0.7476	0.0675	0.2458	0.3133	0.0000	703.2244	703.2244	0.2018	0.0000	708.2685
2021	1.2262	1.7478	1.6118	2.8000e-003	0.0000	0.0879	0.0879	0.0000	0.0831	0.0831	0.0000	241.9227	241.9227	0.0564	0.0000	243.3336
2022	1.8161	1.0550	1.1249	1.8600e-003	0.0000	0.0534	0.0534	0.0000	0.0497	0.0497	0.0000	161.6014	161.6014	0.0465	0.0000	162.7650
Maximum	1.8161	5.6796	4.0170	8.0400e-003	0.4837	0.2639	0.7476	0.0675	0.2458	0.3133	0.0000	703.2244	703.2244	0.2018	0.0000	708.2685

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.1032	0.7091	4.5800	8.0400e-003	0.2177	0.0128	0.2305	0.0152	0.0128	0.0280	0.0000	703.2236	703.2236	0.2018	0.0000	708.2676
2021	1.0837	0.4380	1.7605	2.8000e-003	0.0000	4.2500e-003	4.2500e-003	0.0000	4.2500e-003	4.2500e-003	0.0000	241.9224	241.9224	0.0564	0.0000	243.3333
2022	1.7395	0.3921	1.2376	1.8600e-003	0.0000	2.9300e-003	2.9300e-003	0.0000	2.9300e-003	2.9300e-003	0.0000	161.6012	161.6012	0.0465	0.0000	162.7648
Maximum	1.7395	0.7091	4.5800	8.0400e-003	0.2177	0.0128	0.2305	0.0152	0.0128	0.0280	0.0000	703.2236	703.2236	0.2018	0.0000	708.2676

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	18.30	81.85	-12.21	0.00	55.00	95.06	73.27	77.51	94.72	92.11	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2020	3-31-2020	1.4574	0.1097
2	4-1-2020	6-30-2020	1.5703	0.1788
3	7-1-2020	9-30-2020	1.9463	0.2992
4	10-1-2020	12-31-2020	1.2388	0.2237
5	1-1-2021	3-31-2021	0.4437	0.0674
6	4-1-2021	6-30-2021	0.5984	0.1349
7	7-1-2021	9-30-2021	0.6724	0.4158
8	10-1-2021	12-31-2021	1.2573	0.8996
9	1-1-2022	3-31-2022	1.3010	0.9433

10	4-1-2022	6-30-2022	1.1959	0.9041
11	7-1-2022	9-30-2022	0.3788	0.2876
		Highest	1.9463	0.9433

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition of Existing Buildings and Sitework	Demolition	1/1/2020	4/28/2020	5	85	
2	Site Preparation/Grading	Grading	5/26/2020	8/10/2020	5	55	
3	Building Structures	Building Construction	10/20/2020	6/21/2021	5	175	
4	Building Exterior and Green Roofs	Building Construction	5/5/2021	5/17/2022	5	270	
5	Paving/Site Work	Paving	1/10/2022	9/2/2022	5	170	
6	Building Interiors	Architectural Coating	8/27/2021	7/28/2022	5	240	
7	Piles/Foundations/Utilities	Trenching	7/28/2020	12/21/2020	5	105	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 757,860; Non-Residential Outdoor: 252,620; Striped Parking

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition of Existing Buildings and Sitework	Concrete/Industrial Saws	4	4.00	81	0.73
Demolition of Existing Buildings and Sitework	Crushing/Proc. Equipment	1	5.00	85	0.78
Demolition of Existing Buildings and Sitework	Excavators	3	6.00	158	0.38
Demolition of Existing Buildings and Sitework	Rubber Tired Dozers	2	6.00	247	0.40
Demolition of Existing Buildings and Sitework	Rubber Tired Loaders	2	6.00	203	0.36
Demolition of Existing Buildings and Sitework	Tractors/Loaders/Backhoes	2	5.00	97	0.37
Site Preparation/Grading	Excavators	2	7.00	158	0.38
Site Preparation/Grading	Graders	2	8.00	187	0.41
Site Preparation/Grading	Rollers	3	10.00	80	0.38
Site Preparation/Grading	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation/Grading	Rubber Tired Loaders	2	7.00	203	0.36
Site Preparation/Grading	Scrapers	4	7.00	367	0.48
Site Preparation/Grading	Sweepers/Scrubbers	1	10.00	64	0.46
Site Preparation/Grading	Skid Steer Loaders	2	10.00	65	0.37
Site Preparation/Grading	Tractors/Loaders/Backhoes	1	5.00	97	0.37
Building Structures	Pumps	2	3.00	84	0.74
Building Exterior and Green Roofs	Aerial Lifts	4	5.00	63	0.31
Building Exterior and Green Roofs	Skid Steer Loaders	2	2.00	65	0.37
Paving/Site Work	Plate Compactors	4	1.00	8	0.43
Paving/Site Work	Surfacing Equipment	1	1.00	263	0.30
Paving/Site Work	Sweepers/Scrubbers	2	2.00	64	0.46
Paving/Site Work	Skid Steer Loaders	2	4.00	65	0.37
Paving/Site Work	Forklifts	2	2.00	89	0.20
Building Interiors	Aerial Lifts	0	6.00	63	0.31
Building Structures	Cranes	3	2.00	231	0.29
Building Structures	Forklifts	4	2.00	89	0.20

Building Structures	Generator Sets	4	2.00	84	0.74
Building Interiors	Forklifts	3	5.00	89	0.20
Building Interiors	Cranes	1	2.00	231	0.29
Building Structures	Tractors/Loaders/Backhoes	1	2.00	97	0.37
Building Structures	Welders	4	2.00	46	0.45
Building Interiors	Generator Sets	1	3.00	84	0.74
Building Exterior and Green Roofs	Cranes	1	6.00	231	0.29
Building Exterior and Green Roofs	Forklifts	3	6.00	89	0.20
Building Exterior and Green Roofs	Generator Sets	0	8.00	84	0.74
Building Interiors	Welders	1	3.00	46	0.45
Piles/Foundations/Utilities	Bore/Drill Rigs	2	4.00	221	0.50
Building Exterior and Green Roofs	Tractors/Loaders/Backhoes	1	2.00	97	0.37
Building Exterior and Green Roofs	Welders	0	8.00	46	0.45
Piles/Foundations/Utilities	Cranes	2	4.00	231	0.29
Piles/Foundations/Utilities	Forklifts	2	7.00	89	0.20
Paving/Site Work	Pavers	1	1.00	130	0.42
Paving/Site Work	Paving Equipment	1	1.00	132	0.36
Piles/Foundations/Utilities	Excavators	3	5.00	158	0.38
Paving/Site Work	Rollers	3	1.00	80	0.38
Piles/Foundations/Utilities	Rubber Tired Loaders	2	5.00	203	0.36
Piles/Foundations/Utilities	Pumps	2	1.00	84	0.74
Piles/Foundations/Utilities	Skid Steer Loaders	2	5.00	65	0.37
Piles/Foundations/Utilities	Sweepers/Scrubbers	2	5.00	64	0.46
Building Interiors	Air Compressors	0	8.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition of Existing Buildings and Sitework	14	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation/Grading	17	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Piles/Foundations/Utilities	17	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Structures	18	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Exterior and Green Roofs	11	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving/Site Work	16	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Interiors	6	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use Soil Stabilizer

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition of Existing Buildings and Sitework - 2020

Unmitigated Construction On-Site

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

Fugitive Dust					0.3424	0.0000	0.3424	0.0518	0.0000	0.0518	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1775	1.7283	1.2302	2.3200e-003		0.0862	0.0862		0.0812	0.0812	0.0000	202.5566	202.5566	0.0496	0.0000	203.7973
Total	0.1775	1.7283	1.2302	2.3200e-003	0.3424	0.0862	0.4286	0.0518	0.0812	0.1330	0.0000	202.5566	202.5566	0.0496	0.0000	203.7973

Unmitigated Construction Off-Site

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1541	0.0000	0.1541	0.0117	0.0000	0.0117	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0269	0.1165	1.3676	2.3200e-003		3.5800e-003	3.5800e-003		3.5800e-003	3.5800e-003	0.0000	202.5563	202.5563	0.0496	0.0000	203.7971
Total	0.0269	0.1165	1.3676	2.3200e-003	0.1541	3.5800e-003	0.1577	0.0117	3.5800e-003	0.0152	0.0000	202.5563	202.5563	0.0496	0.0000	203.7971

Mitigated Construction Off-Site

3.3 Site Preparation/Grading - 2020

Unmitigated Construction On-Site

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

Fugitive Dust					0.1413	0.0000	0.1413	0.0157	0.0000	0.0157	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1911	2.2085	1.4489	2.9200e-003		0.0933	0.0933		0.0858	0.0858	0.0000	256.7452	256.7452	0.0830	0.0000	258.8211	
Total	0.1911	2.2085	1.4489	2.9200e-003	0.1413	0.0933	0.2345	0.0157	0.0858	0.1015	0.0000	256.7452	256.7452	0.0830	0.0000	258.8211	

Unmitigated Construction Off-Site

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e	
Category	tons/yr											MT/yr					
Fugitive Dust					0.0636	0.0000	0.0636	3.5300e-003	0.0000	3.5300e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Off-Road	0.0387	0.2716	1.5623	2.9200e-003		4.7900e-003	4.7900e-003		4.7900e-003	4.7900e-003	0.0000	256.7449	256.7449	0.0830	0.0000	258.8208	
Total	0.0387	0.2716	1.5623	2.9200e-003	0.0636	4.7900e-003	0.0684	3.5300e-003	4.7900e-003	8.3200e-003	0.0000	256.7449	256.7449	0.0830	0.0000	258.8208	

Mitigated Construction Off-Site

3.4 Building Structures - 2020

Unmitigated Construction On-Site

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

Off-Road	0.0423	0.3595	0.3082	5.5000e-004		0.0195	0.0195		0.0189	0.0189	0.0000	46.6409	46.6409	7.2500e-003	0.0000	46.8220
Total	0.0423	0.3595	0.3082	5.5000e-004		0.0195	0.0195		0.0189	0.0189	0.0000	46.6409	46.6409	7.2500e-003	0.0000	46.8220

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	
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	
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.3700e-003	0.0492	0.3257	5.5000e-004		7.7000e-004	7.7000e-004		7.7000e-004	7.7000e-004	0.0000	46.6408	46.6408	7.2500e-003	0.0000	46.8220
Total	6.3700e-003	0.0492	0.3257	5.5000e-004		7.7000e-004	7.7000e-004		7.7000e-004	7.7000e-004	0.0000	46.6408	46.6408	7.2500e-003	0.0000	46.8220

Mitigated Construction Off-Site

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

3.4 Building Structures - 2021

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	0.0873	0.7547	0.6972	1.2600e-003		0.0387	0.0387		0.0374	0.0374	0.0000	107.3617	107.3617	0.0162	0.0000	107.7657
Total	0.0873	0.7547	0.6972	1.2600e-003		0.0387	0.0387		0.0374	0.0374	0.0000	107.3617	107.3617	0.0162	0.0000	107.7657

Unmitigated Construction Off-Site

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e	
Category	tons/yr											MT/yr					
Off-Road	0.0147	0.1132	0.7498	1.2600e-003		1.7800e-003	1.7800e-003		1.7800e-003	1.7800e-003	0.0000	107.3616	107.3616	0.0162	0.0000	107.7656	
Total	0.0147	0.1132	0.7498	1.2600e-003		1.7800e-003	1.7800e-003		1.7800e-003	1.7800e-003	0.0000	107.3616	107.3616	0.0162	0.0000	107.7656	

Mitigated Construction Off-Site

3.5 Building Exterior and Green Roofs - 2021

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	0.0673	0.7574	0.6999	1.1900e-003		0.0357	0.0357		0.0328	0.0328	0.0000	104.4637	104.4637	0.0338	0.0000	105.3083
Total	0.0673	0.7574	0.6999	1.1900e-003		0.0357	0.0357		0.0328	0.0328	0.0000	104.4637	104.4637	0.0338	0.0000	105.3083

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	
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	
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0202	0.2924	0.7870	1.1900e-003		1.9500e-003	1.9500e-003		1.9500e-003	1.9500e-003	0.0000	104.4635	104.4635	0.0338	0.0000	105.3082
Total	0.0202	0.2924	0.7870	1.1900e-003		1.9500e-003	1.9500e-003		1.9500e-003	1.9500e-003	0.0000	104.4635	104.4635	0.0338	0.0000	105.3082

Mitigated Construction Off-Site

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

3.5 Building Exterior and Green Roofs - 2022

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	0.0340	0.3776	0.3873	6.7000e-004		0.0171	0.0171		0.0158	0.0158	0.0000	58.5831	58.5831	0.0190	0.0000	59.0568
Total	0.0340	0.3776	0.3873	6.7000e-004		0.0171	0.0171		0.0158	0.0158	0.0000	58.5831	58.5831	0.0190	0.0000	59.0568

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	
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	
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0113	0.1639	0.4412	6.7000e-004		1.0900e-003	1.0900e-003		1.0900e-003	1.0900e-003	0.0000	58.5830	58.5830	0.0190	0.0000	59.0567
Total	0.0113	0.1639	0.4412	6.7000e-004		1.0900e-003	1.0900e-003		1.0900e-003	1.0900e-003	0.0000	58.5830	58.5830	0.0190	0.0000	59.0567

Mitigated Construction Off-Site

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

3.6 Paving/Site Work - 2022

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	0.0320	0.3292	0.3906	6.2000e-004		0.0174	0.0174		0.0160	0.0160	0.0000	53.7365	53.7365	0.0171	0.0000	54.1636
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0320	0.3292	0.3906	6.2000e-004		0.0174	0.0174		0.0160	0.0160	0.0000	53.7365	53.7365	0.0171	0.0000	54.1636

Unmitigated Construction Off-Site

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e	
Category	tons/yr											MT/yr					
Off-Road	0.0108	0.1750	0.4301	6.2000e-004		9.8000e-004	9.8000e-004		9.8000e-004	9.8000e-004	0.0000	53.7364	53.7364	0.0171	0.0000	54.1636	
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Total	0.0108	0.1750	0.4301	6.2000e-004		9.8000e-004	9.8000e-004		9.8000e-004	9.8000e-004	0.0000	53.7364	53.7364	0.0171	0.0000	54.1636	

Mitigated Construction Off-Site

3.7 Building Interiors - 2021

Unmitigated Construction On-Site

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

Archit. Coating	1.0446					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0270	0.2357	0.2147	3.5000e-004		0.0135	0.0135		0.0128	0.0128	0.0000	30.0974	30.0974	6.4900e-003	0.0000	30.2595
Total	1.0716	0.2357	0.2147	3.5000e-004		0.0135	0.0135		0.0128	0.0128	0.0000	30.0974	30.0974	6.4900e-003	0.0000	30.2595

Unmitigated Construction Off-Site

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.0446					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.2900e-003	0.0325	0.2237	3.5000e-004		5.2000e-004	5.2000e-004		5.2000e-004	5.2000e-004	0.0000	30.0973	30.0973	6.4900e-003	0.0000	30.2595
Total	1.0489	0.0325	0.2237	3.5000e-004		5.2000e-004	5.2000e-004		5.2000e-004	5.2000e-004	0.0000	30.0973	30.0973	6.4900e-003	0.0000	30.2595

Mitigated Construction Off-Site

3.7 Building Interiors - 2022

Unmitigated Construction On-Site

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

Archit. Coating	1.7104					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0398	0.3482	0.3471	5.8000e-004		0.0189	0.0189		0.0179	0.0179	0.0000	49.2818	49.2818	0.0105	0.0000	49.5446	
Total	1.7502	0.3482	0.3471	5.8000e-004		0.0189	0.0189		0.0179	0.0179	0.0000	49.2818	49.2818	0.0105	0.0000	49.5446	

Unmitigated Construction Off-Site

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.7104					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.0200e-003	0.0532	0.3663	5.8000e-004		8.5000e-004	8.5000e-004		8.5000e-004	8.5000e-004	0.0000	49.2818	49.2818	0.0105	0.0000	49.5445
Total	1.7174	0.0532	0.3663	5.8000e-004		8.5000e-004	8.5000e-004		8.5000e-004	8.5000e-004	0.0000	49.2818	49.2818	0.0105	0.0000	49.5445

Mitigated Construction Off-Site

3.8 Piles/Foundations/Utilities - 2020

Unmitigated Construction On-Site

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

Off-Road	0.1288	1.3834	1.0297	2.2500e-003		0.0650	0.0650		0.0600	0.0600	0.0000	197.2818	197.2818	0.0619	0.0000	198.8280
Total	0.1288	1.3834	1.0297	2.2500e-003		0.0650	0.0650		0.0600	0.0600	0.0000	197.2818	197.2818	0.0619	0.0000	198.8280

Unmitigated Construction Off-Site

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e	
Category	tons/yr											MT/yr					
Off-Road	0.0312	0.2718	1.3244	2.2500e-003		3.6700e-003	3.6700e-003		3.6700e-003	3.6700e-003	0.0000	197.2816	197.2816	0.0619	0.0000	198.8278	
Total	0.0312	0.2718	1.3244	2.2500e-003		3.6700e-003	3.6700e-003		3.6700e-003	3.6700e-003	0.0000	197.2816	197.2816	0.0619	0.0000	198.8278	

Mitigated Construction Off-Site

EMFAC2017 Construction Emissions

TRAFFIC EMISSIONS using EMFAC2017

w/Mitigation

200 Caribbean

Duration	Phase	Total Trips			Trip Length			VMT	Hauling Based Upon...	Emissions tons/day				Start Emissions tons/day				Idle Emissions (tons/day)							
		Worker	Tri	Vendor	Tri	Worker	HHD, LDT, L			ROG	NOx	PM10ex	PM2.5ex	ROG	NOx	PM10ex	PM2.5ex	ROG	NOx	PM10ex	PM2.5ex				
	Vehicle Type				DT2		DT																		
2020	85	Demolition of Existing Buildings and Sitework	35	0	2,975	-	1,600	10.8	7.3	20	32,130	-	32,000	8,000 demo tons at 10tons/load											
2020	55	Site Preparation/Grading	43	0	2,365	-	22,188	10.8	7.3	20	25,542	-	443,760	196,500cy at 15 cy/load											
2020	105	Piles/Foundations/Utilities	43	0	4,515	-	2,458	10.8	7.3	7.3	48,762	-	17,943	461+684+84 loads cement											
2020	175	Building Structures	404	177	70,700	30,975	3,110	10.8	7.3	7.3	763,560	226,118	22,703	920+635 loads cement											
2021	270	Building Exterior and Green Roofs	404	177	109,080	47,790	813	10.8	7.3	7.3	1,178,064	348,867	5,935	6,500 soil at 10 cy/load											
2021	170	Paving/Site Work	40	0	6,800	-	-	10.8	7.3	7.3	73,440	-	-												
2021	240	Building Interiors	81	0	19,440	-	-	10.8	7.3	7.3	209,952	-	-												
					215,875	78,765	30,169				2,331,450	574,985	522,341		sum		4.11								
		50%LDA,25%LDT1,25% LDT2	50%HHDT																						
		2019 Rate	2020																						
	ROG																								
	NOx	0.081232258	3.279696	3.170481																					
	PM10ex																								
	PM2.5ex																								
	CO2																								
	2020 Rate																								
	ROG																								
	NOx	0.081232258	3.279696	3.170481																					
	PM10ex																								
	PM2.5ex																								
	Mitigated Rate																								
	NOx																								
	3.170481																								
	Start/RL factors g/trip																								
	50%LDA,25%LDT1,25% LDT2	50%HHDT																							
	2019 Rate	2020																							
	ROG																								
	NOx	0.2712	1.6729	2.1952																					
	PM10ex																								
	PM2.5ex																								
	CO2																								
	Idle Rate																								
	NOx																								
	25.59323	45.23874																							
	2020 Rate																								
	ROG																								
	NOx	0.2712	1.672914	2.195164																					
	PM10ex																								
	PM2.5ex																								
	CO2																								
	Idle Rate																								
	NOx																								
	25.59323	45.23874																							
	Mitigated Rate																								
	Start																								
	NOx																								
	2.195164																								
	Idle Rate																								
	NOx																								
	25.59323	45.23874																							

run+start+idle

4.70

TRAFFIC EMISSIONS using EMFAC2017

w/Mitigation

Parking Areas

Duration	Phase	Total Trips			Trip Length			VMT							
		Worker Trips	Vendor Trips	Worker	Vendor	Haul/Cement trips	total	Worker Trips	Vendor Trips	Haul	Trips	Worker	Vendor	Haul	Hauling Based Upon...
Vehicle Type		LDA,LDT1,LDT2			HHDT,MHDT	HHDT									
20	Demolition			20	0	303		10.8	7.3	20	216	0	6060	from CalEEMod	
30	Site Preparation/Grading			20	0	0		10.8	7.3	20		216	0	0	
		0	0					10.8	7.3	7.3	0	0	0	0	
		0	0					10.8	7.3	7.3	0	0	0	0	
		0	0					10.8	7.3	7.3	0	0	0	0	
		0	0					10.8	7.3	7.3	0	0	0	0	
		0	0					10.8	7.3	7.3	0	0	0	0	
		40	0	303							432	0	6060		

Rate

Emissions in tons

	Worker	Vendor	Haul	Total	
9	1.03901E-05	0	0.001498	0.0015081	0.0015081
11	4.536E-05	0	0.02116	0.0212052	0.034992
3	8.5246E-07	0	0.000621	0.0006217	0.000622
6	7.85171E-07	0	0.000594	0.0005948	0.000595
1	0.145535468	10	75257	10.898102	0.000595

Mitigated Rate

NOx 3.170481

TRAFFIC EMISSIONS using EMFAC2017

Uncontrolled

200 Caribbean

TRAFFIC EMISSIONS using EMFAC2017

Uncontrolled

Parking Areas

Duration	Phase	Total Trips			Trip Length			VMT							
		Worker Trips	Vendor Trips	Worker	Vendor	Haul/Cement trips	total	Worker Trips	Vendor Trips	Haul	Trips	Worker	Vendor	Haul	Hauling Based Upon...
Vehicle Type		LDA,LDT1,LDT2			HHDT,MHDT	HHDT									
20	Demolition			20	0	303		10.8	7.3	20	216	0	6060	from CalEEMod	
30	Site Preparation/Grading			20	0	0		10.8	7.3	20		216	0	0	
		0	0					10.8	7.3	7.3	0	0	0	0	
		0	0					10.8	7.3	7.3	0	0	0	0	
		0	0					10.8	7.3	7.3	0	0	0	0	
		0	0					10.8	7.3	7.3	0	0	0	0	
		0	0					10.8	7.3	7.3	0	0	0	0	
		40	0	303							432	0	6060		

Rate

Emissions in tons

Worker	Vendor	Haul	Total	
9 1.03901E-05	0	0.001498	0.0015081	0.0015081
6 4.536E-05	0	0.034946	0.0349915	0.034992
3 8.5246E-07	0	0.000621	0.0006217	0.000622
6 7.85171E-07	0	0.000594	0.0005948	0.000595
0 0.145535468	0	10.75257	10.898102	0.000595

Mitigated Ra

NOx 3.170481

EMFAC2017 (v1.0.2) Emission Rates															
Region Type: County		Run	Start	idle											
Region: SANTA CLARA		Model 2010+	Rate	3.170481	2.195164	64.62676921									
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HTSK and RUNL5, g/vehicle/day for iDLEX, RESTL and DIURN															
Total: 954867.4															
Region	Calendar Y	Vehicle Cat	Model	Year	Speed	Fuel	Population	VMT	Trips	%	NOx	RUNE	NOx_IDLE	NOx_STRE	
SANTA CLA	2019	HHD ^T	1975 Aggregate	DSL	0.088128	2.610282	0.514973	0%	22.36094	16.95318	0				
SANTA CLA	2019	HHD ^T	1976 Aggregate	DSL	1.513227	28.46776	10.5459	0%	21.92449	22.39189	0				
SANTA CLA	2019	HHD ^T	1977 Aggregate	DSL	0.510373	11.39877	4.873589	0%	22.43911	15.68176	0				
SANTA CLA	2019	HHD ^T	1978 Aggregate	DSL	0.534226	12.00652	4.044929	0%	22.47923	14.99223	0				
SANTA CLA	2019	HHD ^T	1979 Aggregate	DSL	1.120977	43.81956	13.32096	0%	22.31087	22.00411	0				
SANTA CLA	2019	HHD ^T	1980 Aggregate	DSL	1.313179	26.16862	13.32098	0%	22.31087	15.04232	0				
SANTA CLA	2019	HHD ^T	1981 Aggregate	DSL	8.997245	226.8368	46.93491	0%	22.48753	26.16046	0				
SANTA CLA	2019	HHD ^T	1982 Aggregate	DSL	5.084246	134.5045	25.03721	0%	22.365	26.33206	0				
SANTA CLA	2019	HHD ^T	1983 Aggregate	DSL	12.24852	262.3532	56.70764	0%	21.74697	26.50188	0				
SANTA CLA	2019	HHD ^T	1984 Aggregate	DSL	12.37494	293.95688	70.33778	0%	21.71757	22.83104	0				
SANTA CLA	2019	HHD ^T	1985 Aggregate	DSL	16.09709	381.2447	105.8066	0%	21.79611	22.22172	0				
SANTA CLA	2019	HHD ^T	1986 Aggregate	DSL	17.78959	453.6378	81.1404	0%	21.231	26.93182	0				
SANTA CLA	2019	HHD ^T	1987 Aggregate	DSL	19.6574	495.1181	127.1247	0%	22.00699	34.78227	0				
SANTA CLA	2019	HHD ^T	1988 Aggregate	DSL	20.99835	534.526	121.2542	0%	21.78653	35.78167	0				
SANTA CLA	2019	HHD ^T	1989 Aggregate	DSL	22.62673	650.4652	190.1165	0%	21.99211	28.34955	0				
SANTA CLA	2019	HHD ^T	1990 Aggregate	DSL	32.39085	847.7674	213.5131	0%	21.74143	33.72823	0				
SANTA CLA	2019	HHD ^T	1991 Aggregate	DSL	24.52876	658.052	145.8124	0%	24.45283	40.63023	0				
SANTA CLA	2019	HHD ^T	1992 Aggregate	DSL	33.72415	899.5795	200.2492	0%	24.22341	41.68513	0				
SANTA CLA	2019	HHD ^T	1993 Aggregate	DSL	19.82012	651.6744	165.5728	0%	23.336	31.8308	0				
SANTA CLA	2019	HHD ^T	1994 Aggregate	DSL	40.90952	1203.52	283.259	0%	20.87315	39.92323	0				
SANTA CLA	2019	HHD ^T	1995 Aggregate	DSL	43.93186	1436.402	310.536	0%	20.85636	39.47576	0				
SANTA CLA	2019	HHD ^T	1996 Aggregate	DSL	77.85186	4306.479	600.410	0%	20.36869	39.04106	0				
SANTA CLA	2019	HHD ^T	1997 Aggregate	DSL	70.85038	4065.504	588.019	0%	20.83859	36.52003	0				
SANTA CLA	2019	HHD ^T	1998 Aggregate	DSL	115.0069	6467.075	1048.747	1%	20.32185	21.08092	0				
SANTA CLA	2019	HHD ^T	1999 Aggregate	DSL	146.8946	9265.733	1447.935	1%	24.47	41.01463	0				
SANTA CLA	2019	HHD ^T	2000 Aggregate	DSL	153.7529	10896.51	1680.025	1%	24.64274	0.09885	0				
SANTA CLA	2019	HHD ^T	2001 Aggregate	DSL	139.7268	8892.949	1350.047	1%	24.5393	42.52618	0				
SANTA CLA	2019	HHD ^T	2002 Aggregate	DSL	128.3057	6893.638	994.2164	1%	23.72352	51.47656	0				
SANTA CLA	2019	HHD ^T	2003 Aggregate	DSL	99.45185	611.7313	916.7427	1%	14.18952	48.62119	0				
SANTA CLA	2019	HHD ^T	2004 Aggregate	DSL	100.4368	6287.974	951.5333	1%	12.34498	47.04494	0				
SANTA CLA	2019	HHD ^T	2005 Aggregate	DSL	159.1041	11548.83	1568.683	1%	12.32339	49.59847	0				
SANTA CLA	2019	HHD ^T	2006 Aggregate	DSL	187.5949	15042.45	1917.62	2%	12.304	49.34845	0				
SANTA CLA	2019	HHD ^T	2007 Aggregate	DSL	315.0237	23683.59	2866.44	2%	11.20432	55.83615	0				
SANTA CLA	2019	HHD ^T	2008 Aggregate	DSL	485.2536	40925.59	4283.26	4%	9.272391	109.4683	0				
SANTA CLA	2019	HHD ^T	2009 Aggregate	DSL	477.692	46187.21	4484.285	5%	9.065044	67.17084	0				
SANTA CLA	2019	HHD ^T	2010 Aggregate	DSL	363.913	39855.61	3610.721	4%	8.317089	67.78989	0.318748				
SANTA CLA	2019	HHD ^T	2011 Aggregate	DSL	407.3467	47991.55	4214.41	5%	5.065467	52.97664	1.800856				
SANTA CLA	2019	HHD ^T	2012 Aggregate	DSL	671.4471	87351.77	7537.475	9%	4.013851	51.00186	2.279945				
SANTA CLA	2019	HHD ^T	2013 Aggregate	DSL	545.874	75251.49	6151.366	8%	3.67588	52.20439	2.322096				
SANTA CLA	2019	HHD ^T	2014 Aggregate	DSL	524.402	8200.91	6171.085	9%	2.31389	66.090	2.384943				
SANTA CLA	2019	HHD ^T	2015 Aggregate	DSL	53.1169	155601.5	7416.617	11%	1.773731	70.94639	1.346184				
SANTA CLA	2019	HHD ^T	2016 Aggregate	DSL	821.2022	155320.8	10071.64	16%	1.773465	82.39479	2.418172				
SANTA CLA	2019	HHD ^T	2017 Aggregate	DSL	311.3198	53085.30	3311.55	16%	1.230101	10.92478	2.418003				
SANTA CLA	2019	HHD ^T	2018 Aggregate	DSL	271.4255	53682.01	3166.319	6%	1.474796	80.25384	2.323221				
SANTA CLA	2019	HHD ^T	2019 Aggregate	DSL	186.8043	35387.5	2107.373	4%	1.316027	73.57305	2.345553				
SANTA CLA	2019	HHD ^T	2020 Aggregate	DSL	88.32466	8396.186	1094.568	1%	1.139015	94.86147	2.266986				

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Operational Emissions

Proposed Project

Google Caribbean Campuses - Santa Clara County, Annual

Google Caribbean Campuses
Santa Clara County, Annual

1.0 Project Characteristics**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Office Park	1,041.89	1000sqft	45.00	1,041,890.00	4700
General Heavy Industry	0.00	1000sqft	0.00	52,800.00	0
Parking Lot	286.40	1000sqft	0.00	286,400.00	0
Unenclosed Parking with Elevator	1,235.00	Space	0.00	379,145.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	58
Climate Zone	4			Operational Year	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E's 2020 emission rate

Land Use - Office park at 536,750sf + 505,140sf = 1,041,890sf, 81,000sf CentralPlant, Parking structure=379,400sf, Parkinglot = 201,400sf+85,000=

Construction Phase - Operational Run only

Off-road Equipment - Operational run only

Grading -

Vehicle Trips - w/TDM =7641trips per 1,081ksf = 7.31 weekday trips (City=8.65,1.24,0.58) (Utility = 11.59)

Woodstoves -

Energy Use - Natural gas usage must meet 15.6 HVAC + 2.5 DWH = 18.1 kBtu/sf/yr

Water And Wastewater - Assume wastewater treatment plant

Solid Waste - 20.8+22.0 cy/day@0.218t/cy*250days=2,333

Construction Off-road Equipment Mitigation -

Energy Mitigation - PV system for 200 Caribbean = 4,632,700 kwh, for 100 Caribbean = same as 200 Caribbean

Assume 5% reduction for LEED Gold (meet 2010 building code standards)

Water Mitigation - some water efficiency

Stationary Sources - Emergency Generators and Fire Pumps - 1 600kW gen and 1 1,000kW gen, assume two 1,000Hp gens

Stationary Sources - Process Boilers - No data, use default natural gas

Table Name	Column Name	Default Value	New Value
tblEnergyUse	T24NG	21.04	18.10
tblLandUse	LandUseSquareFeet	0.00	52,800.00
tblLandUse	LandUseSquareFeet	494,000.00	379,145.00
tblLandUse	LotAcreage	23.92	45.00
tblLandUse	LotAcreage	6.57	0.00
tblLandUse	LotAcreage	11.11	0.00
tblLandUse	Population	0.00	4,700.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblSolidWaste	SolidWasteGenerationRate	0.00	65.47
tblSolidWaste	SolidWasteGenerationRate	968.96	2,333.00
tblStationaryBoilersUse	NumberOfEquipment	0.00	9.00
tblStationaryGeneratorsPumpsEF	CH4_EF	0.07	0.07
tblStationaryGeneratorsPumpsEF	ROG_EF	2.2480e-003	2.2477e-003
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	2,000.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	50.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	2.00
tblTripsAndVMT	WorkerTripNumber	0.00	18.00

tblVehicleTrips	ST_TR	1.50	11.59
tblVehicleTrips	ST_TR	1.64	1.24
tblVehicleTrips	SU_TR	1.50	11.59
tblVehicleTrips	SU_TR	0.76	0.58
tblVehicleTrips	WD_TR	1.50	11.59
tblVehicleTrips	WD_TR	11.42	8.65
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPerce nt	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPerce nt	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPerce nt	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPerce nt	2.21	0.00
tblWater	IndoorWaterUseRate	0.00	12,210,000.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00

2.0 Emissions Summary

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	4.9052	2.1000e-004	0.0236	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0458	0.0458	1.2000e-004	0.0000	0.0488
Energy	0.1097	0.9968	0.8373	5.9800e-003		0.0758	0.0758		0.0758	0.0758	0.0000	3,931.7996	3,931.7996	0.3055	0.0788	3,962.9158
Mobile	1.4688	5.6051	17.8401	0.0651	6.2517	0.0503	6.3020	1.6734	0.0469	1.7203	0.0000	5,960.6131	5,960.6131	0.1874	0.0000	5,965.2970
Stationary	0.1641	0.7339	0.4184	7.9000e-004		0.0241	0.0241		0.0241	0.0241	0.0000	76.1594	76.1594	0.0107	0.0000	76.4264
Waste						0.0000	0.0000		0.0000	0.0000	486.8677	0.0000	486.8677	28.7731	0.0000	1,206.1942
Water						0.0000	0.0000		0.0000	0.0000	69.8365	192.7496	262.5862	0.2596	0.1559	315.5234
Total	6.6478	7.3360	19.1194	0.0718	6.2517	0.1503	6.4020	1.6734	0.1469	1.8203	556.7043	10,161.3675	10,718.0718	29.5363	0.2347	11,526.4057

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.9052	2.1000e-004	0.0236	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0458	0.0458	1.2000e-004	0.0000	0.0488
Energy	0.1043	0.9480	0.7963	5.6900e-003		0.0721	0.0721		0.0721	0.0721	0.0000	3,559.6010	3,559.6010	0.2725	0.0712	3,587.6366
Mobile	1.4688	5.6051	17.8401	0.0651	6.2517	0.0503	6.3020	1.6734	0.0469	1.7203	0.0000	5,960.6131	5,960.6131	0.1874	0.0000	5,965.2970
Stationary	0.1641	0.7339	0.4184	7.9000e-004		0.0241	0.0241		0.0241	0.0241	0.0000	76.1594	76.1594	0.0107	0.0000	76.4264
Waste						0.0000	0.0000		0.0000	0.0000	486.8677	0.0000	486.8677	28.7731	0.0000	1,206.1942
Water						0.0000	0.0000		0.0000	0.0000	55.8692	161.4629	217.3322	0.2084	0.1248	259.7449
Total	6.6424	7.2872	19.0784	0.0715	6.2517	0.1466	6.3983	1.6734	0.1431	1.8166	542.7370	9,757.8823	10,300.6193	29.4522	0.1961	11,095.3479

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.08	0.66	0.21	0.40	0.00	2.47	0.06	0.00	2.53	0.20	2.51	3.97	3.89	0.28	16.45	3.74

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	tons/yr											MT/yr					
Mitigated	1.4688	5.6051	17.8401	0.0651	6.2517	0.0503	6.3020	1.6734	0.0469	1.7203	0.0000	5,960.6131	5,960.6131	0.1874	0.0000	5,965.2970	
Unmitigated	1.4688	5.6051	17.8401	0.0651	6.2517	0.0503	6.3020	1.6734	0.0469	1.7203	0.0000	5,960.6131	5,960.6131	0.1874	0.0000	5,965.2970	

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated		Mitigated	
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT	Annual VMT	Annual VMT
General Heavy Industry	0.00	0.00	0.00				
Office Park	9,012.35	1,291.94	604.30	16,812,617		16,812,617	
Parking Lot	0.00	0.00	0.00				
Unenclosed Parking with Elevator	0.00	0.00	0.00				
Total	9,012.35	1,291.94	604.30	16,812,617		16,812,617	

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Heavy Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
Office Park	9.50	7.30	7.30	33.00	48.00	19.00	82	15	3
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Unenclosed Parking with	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Heavy Industry	0.612822	0.036208	0.182365	0.105071	0.013933	0.005011	0.012748	0.021514	0.002168	0.001529	0.005280	0.000629	0.000720
Office Park	0.612822	0.036208	0.182365	0.105071	0.013933	0.005011	0.012748	0.021514	0.002168	0.001529	0.005280	0.000629	0.000720
Parking Lot	0.612822	0.036208	0.182365	0.105071	0.013933	0.005011	0.012748	0.021514	0.002168	0.001529	0.005280	0.000629	0.000720
Unenclosed Parking with Elevator	0.612822	0.036208	0.182365	0.105071	0.013933	0.005011	0.012748	0.021514	0.002168	0.001529	0.005280	0.000629	0.000720

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Install High Efficiency Lighting

Kilowatt Hours of Renewable Electricity Generated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2,527.5728	2,527.5728	0.2528	0.0523	2,549.4755
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2,846.6773	2,846.6773	0.2847	0.0589	2,871.3452
NaturalGas Mitigated	0.1043	0.9480	0.7963	5.6900e-003		0.0721	0.0721		0.0721	0.0721	0.0000	1,032.0283	1,032.0283	0.0198	0.0189	1,038.1611
NaturalGas Unmitigated	0.1097	0.9968	0.8373	5.9800e-003		0.0758	0.0758		0.0758	0.0758	0.0000	1,085.1223	1,085.1223	0.0208	0.0199	1,091.5707

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Land Use	kBTU/yr	tons/yr											MT/yr					
General Heavy Industry	1.39286e+006	7.5100e-003	0.0683	0.0574	4.1000e-004		5.1900e-003	5.1900e-003		5.1900e-003	5.1900e-003	0.0000	74.3285	74.3285	1.4200e-003	1.3600e-003	74.7702	
Office Park	1.89416e+007	0.1021	0.9285	0.7800	5.5700e-003		0.0706	0.0706		0.0706	0.0706	0.0000	1,010.7938	1,010.793	0.0194	0.0185	1,016.8004	
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Total		0.1097	0.9968	0.8373	5.9800e-003		0.0758	0.0758		0.0758	0.0758	0.0000	1,085.1223	1,085.122	0.0208	0.0199	1,091.5707	

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Land Use	kBTU/yr	tons/yr											MT/yr					
General Heavy Industry	1.34083e+006	7.2300e-003	0.0657	0.0552	3.9000e-004		5.0000e-003	5.0000e-003		5.0000e-003	5.0000e-003	0.0000	71.5518	71.5518	1.3700e-003	1.3100e-003	71.9770	
Office Park	1.79986e+007	0.0971	0.8823	0.7411	5.2900e-003		0.0671	0.0671		0.0671	0.0671	0.0000	960.4765	960.4765	0.0184	0.0176	966.1841	
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Total		0.1043	0.9480	0.7963	5.6800e-003		0.0721	0.0721		0.0721	0.0721	0.0000	1,032.0283	1,032.028	0.0198	0.0189	1,038.1611	

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	436128	57.3691	5.7400e-003	1.1900e-003	57.8662
Office Park	2.03689e+007	2,679.3680	0.2679	0.0554	2,702.5861
Parking Lot	100240	13.1858	1.3200e-003	2.7000e-004	13.3000
Unenclosed Parking with Elevators	735541	96.7544	9.6800e-003	2.0000e-003	97.5928
Total		2,846.6773	0.2847	0.0589	2,871.3452

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	-24610.4	-3.2373	-0.0003	-0.0001	-3.2654
Office Park	1.93394e+007	2,543.9387	0.2544	0.0526	2,565.9832
Parking Lot	-353472	-46.4963	-0.0047	-0.0010	-46.8993
Unenclosed Parking with Elevators	253666	33.3677	3.3400e-003	6.9000e-004	33.6568
Total		2,527.5727	0.2528	0.0523	2,549.4755

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	tons/yr										MT/yr						
Mitigated	4.9052	2.1000e-004	0.0236	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0458	0.0458	1.2000e-004	0.0000	0.0488	
Unmitigated	4.9052	2.1000e-004	0.0236	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0458	0.0458	1.2000e-004	0.0000	0.0488	

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	0.5847					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Consumer Products	4.3183					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Landscaping	2.1800e-003	2.1000e-004	0.0236	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0458	0.0458	1.2000e-004	0.0000	0.0488	
Total	4.9052	2.1000e-004	0.0236	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0458	0.0458	1.2000e-004	0.0000	0.0488	

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
SubCategory	tons/yr											MT/yr					
Architectural Coating	0.5847						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.3183						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.1800e-003	2.1000e-004	0.0236	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0458	0.0458	1.2000e-004	0.0000	0.0488	
Total	4.9052	2.1000e-004	0.0236	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0458	0.0458	1.2000e-004	0.0000	0.0488	

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	217.3322	0.2084	0.1248	259.7449
Unmitigated	262.5862	0.2596	0.1559	315.5234

7.2 Water by Land Use

Unmitigated

	Indoor/Out door Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	12.21 / 0	13.0107	0.0157	9.5700e- 003	16.2572
Office Park	185.179 / 113.497	249.5755	0.2439	0.1463	299.2662
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking with Elevators	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		262.5862	0.2597	0.1559	315.5234

Mitigated

	Indoor/Out door Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	9.768 / 0	10.4085	0.0126	7.6600e- 003	13.0058
Office Park	148.143 / 106.574	206.9236	0.1959	0.1172	246.7391
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking with Elevators	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		217.3322	0.2084	0.1248	259.7449

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
MT/yr				
Mitigated	486.8677	28.7731	0.0000	1,206.1942
Unmitigated	486.8677	28.7731	0.0000	1,206.1942

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
MT/yr					
General Heavy Industry	65.47	13.2898	0.7854	0.0000	32.9250
Office Park	2333	473.5779	27.9877	0.0000	1,173.2692
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Total		486.8677	28.7731	0.0000	1,206.1942

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	65.47	13.2898	0.7854	0.0000	32.9250
Office Park	2333	473.5779	27.9877	0.0000	1,173.2692
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking with Elevation	0	0.0000	0.0000	0.0000	0.0000
Total		486.8677	28.7731	0.0000	1,206.1942

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	2	0	50	2000	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
Boiler	9	0	0	0	CNG

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Equipment Type	tons/yr										MT/yr						
Boiler - CNG (0 - 2 MMBTU)	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Emergency Generator - Diesel (750,0000 HP)	0.1641	0.7339	0.4184	7.9000e-004		0.0241	0.0241		0.0241	0.0241	0.0000	76.1594	76.1594	0.0107	0.0000	76.4264	
Total	0.1641	0.7339	0.4184	7.9000e-004		0.0241	0.0241		0.0241	0.0241	0.0000	76.1594	76.1594	0.0107	0.0000	76.4264	

11.0 Vegetation

Google Caribbean Campuses - Santa Clara County, Annual

Google Caribbean Campuses
Santa Clara County, Annual

1.0 Project Characteristics**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Office Park	1,041.89	1000sqft	45.00	1,041,890.00	4700
General Heavy Industry	0.00	1000sqft	0.00	52,800.00	0
Parking Lot	286.40	1000sqft	0.00	286,400.00	0
Unenclosed Parking with Elevator	1,235.00	Space	0.00	379,145.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	58
Climate Zone	4			Operational Year	2030
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E's 2020 emission rate

Land Use - Office park at 536,750sf + 505,140sf = 1,041,890sf, 81,000sf CentralPlant, Parking structure=379,400sf, Parkinglot = 201,400sf+85,000=

Construction Phase - Operational Run only

Off-road Equipment - Operational run only

Grading -

Vehicle Trips - w/TDM =7641trips per 1,081ksf = 7.31 weekday trips (City=8.65,1.24,0.58) (Utility = 11.59)

Woodstoves -

Energy Use - Natural gas usage must meet 15.6 HVAC + 2.5 DWH = 18.1 kBtu/sf/yr

Water And Wastewater - Assume wastewater treatment plant

Solid Waste - 20.8+22.0 cy/day@0.218t/cy*250days=2,333

Construction Off-road Equipment Mitigation -

Energy Mitigation - PV system for 200 Caribbean = 4,632,700 kwh, for 100 Caribbean = same as 200 Caribbean

Assume 5% reduction for LEED Gold (meet 2010 building code standards)

Water Mitigation - some water efficiency

Stationary Sources - Emergency Generators and Fire Pumps - 1 600kW gen and 1 1,000kW gen, assume two 1,000Hp gens

Stationary Sources - Process Boilers - No data, use default natural gas

Table Name	Column Name	Default Value	New Value
tblEnergyUse	T24NG	21.04	18.10
tblLandUse	LandUseSquareFeet	0.00	52,800.00
tblLandUse	LandUseSquareFeet	494,000.00	379,145.00
tblLandUse	LotAcreage	23.92	45.00
tblLandUse	LotAcreage	6.57	0.00
tblLandUse	LotAcreage	11.11	0.00
tblLandUse	Population	0.00	4,700.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblSolidWaste	SolidWasteGenerationRate	0.00	65.47
tblSolidWaste	SolidWasteGenerationRate	968.96	2,333.00
tblStationaryBoilersUse	NumberOfEquipment	0.00	9.00
tblStationaryGeneratorsPumpsEF	CH4_EF	0.07	0.07
tblStationaryGeneratorsPumpsEF	ROG_EF	2.2480e-003	2.2477e-003
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	2,000.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	50.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	2.00
tblTripsAndVMT	WorkerTripNumber	0.00	18.00

tblVehicleTrips	ST_TR	1.50	11.59
tblVehicleTrips	ST_TR	1.64	1.24
tblVehicleTrips	SU_TR	1.50	11.59
tblVehicleTrips	SU_TR	0.76	0.58
tblVehicleTrips	WD_TR	1.50	11.59
tblVehicleTrips	WD_TR	11.42	8.65
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	Anaerobic and Facultative Lagoons Percent	2.21	0.00
tblWater	Anaerobic and Facultative Lagoons Percent	2.21	0.00
tblWater	Anaerobic and Facultative Lagoons Percent	2.21	0.00
tblWater	Anaerobic and Facultative Lagoons Percent	2.21	0.00
tblWater	Indoor Water Use Rate	0.00	12,210,000.00
tblWater	Septic Tank Percent	10.33	0.00
tblWater	Septic Tank Percent	10.33	0.00
tblWater	Septic Tank Percent	10.33	0.00
tblWater	Septic Tank Percent	10.33	0.00

2.0 Emissions Summary

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	4.9052	2.1000e-004	0.0234	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0458	0.0458	1.2000e-004	0.0000	0.0488
Energy	0.1097	0.9968	0.8373	5.9800e-003		0.0758	0.0758		0.0758	0.0758	0.0000	3,931.7996	3,931.7996	0.3055	0.0788	3,962.9158
Mobile	1.0346	4.4872	12.3000	0.0537	6.2504	0.0358	6.2861	1.6727	0.0333	1.7060	0.0000	4,940.8325	4,940.8325	0.1403	0.0000	4,944.3411
Stationary	0.1641	0.7339	0.4184	7.9000e-004		0.0241	0.0241		0.0241	0.0241	0.0000	76.1594	76.1594	0.0107	0.0000	76.4264
Waste						0.0000	0.0000		0.0000	0.0000	486.8677	0.0000	486.8677	28.7731	0.0000	1,206.1942
Water						0.0000	0.0000		0.0000	0.0000	69.8365	192.7496	262.5862	0.2596	0.1559	315.5234
Total	6.2135	6.2181	13.5792	0.0605	6.2504	0.1358	6.3861	1.6727	0.1332	1.8059	556.7043	9,141.5869	9,698.2912	29.4893	0.2347	10,505.4497

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.9052	2.1000e-004	0.0234	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0458	0.0458	1.2000e-004	0.0000	0.0488
Energy	0.1043	0.9480	0.7963	5.6900e-003		0.0721	0.0721		0.0721	0.0721	0.0000	3,559.6010	3,559.6010	0.2725	0.0712	3,587.6366
Mobile	1.0346	4.4872	12.3000	0.0537	6.2504	0.0358	6.2861	1.6727	0.0333	1.7060	0.0000	4,940.8325	4,940.8325	0.1403	0.0000	4,944.3411
Stationary	0.1641	0.7339	0.4184	7.9000e-004		0.0241	0.0241		0.0241	0.0241	0.0000	76.1594	76.1594	0.0107	0.0000	76.4264
Waste						0.0000	0.0000		0.0000	0.0000	486.8677	0.0000	486.8677	28.7731	0.0000	1,206.1942
Water						0.0000	0.0000		0.0000	0.0000	55.8692	161.4629	217.3322	0.2084	0.1248	259.7449
Total	6.2081	6.1693	13.5382	0.0602	6.2504	0.1320	6.3824	1.6727	0.1295	1.8022	542.7370	8,738.1017	9,280.8387	29.4052	0.1961	10,074.3920

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.09	0.78	0.30	0.48	0.00	2.73	0.06	0.00	2.78	0.21	2.51	4.41	4.30	0.29	16.45	4.10

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.0346	4.4872	12.3000	0.0537	6.2504	0.0358	6.2861	1.6727	0.0333	1.7060	0.0000	4,940.8325	4,940.8325	0.1403	0.0000	4,944.3411
Unmitigated	1.0346	4.4872	12.3000	0.0537	6.2504	0.0358	6.2861	1.6727	0.0333	1.7060	0.0000	4,940.8325	4,940.8325	0.1403	0.0000	4,944.3411

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated		Mitigated	
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT	Annual VMT	Annual VMT
General Heavy Industry	0.00	0.00	0.00				
Office Park	9,012.35	1,291.94	604.30	16,812,617			16,812,617
Parking Lot	0.00	0.00	0.00				
Unenclosed Parking with Elevator	0.00	0.00	0.00				
Total	9,012.35	1,291.94	604.30	16,812,617			16,812,617

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-NW	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Heavy Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
Office Park	9.50	7.30	7.30	33.00	48.00	19.00	82	15	3
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

Unenclosed Parking with	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0	0
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4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Heavy Industry	0.621541	0.034056	0.180136	0.101248	0.011859	0.005060	0.013110	0.022881	0.002221	0.001470	0.005122	0.000646	0.000651
Office Park	0.621541	0.034056	0.180136	0.101248	0.011859	0.005060	0.013110	0.022881	0.002221	0.001470	0.005122	0.000646	0.000651
Parking Lot	0.621541	0.034056	0.180136	0.101248	0.011859	0.005060	0.013110	0.022881	0.002221	0.001470	0.005122	0.000646	0.000651
Unenclosed Parking with Elevator	0.621541	0.034056	0.180136	0.101248	0.011859	0.005060	0.013110	0.022881	0.002221	0.001470	0.005122	0.000646	0.000651

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Install High Efficiency Lighting

Kilowatt Hours of Renewable Electricity Generated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated							0.0000	0.0000		0.0000	0.0000	2,527.5728	2,527.5728	0.2528	0.0523	2,549.4755
Electricity Unmitigated							0.0000	0.0000		0.0000	0.0000	2,846.6773	2,846.6773	0.2847	0.0589	2,871.3452
NaturalGas Mitigated	0.1043	0.9480	0.7963	5.6900e-003		0.0721	0.0721		0.0721	0.0721	0.0000	1,032.0283	1,032.0283	0.0198	0.0189	1,038.1611
NaturalGas Unmitigated	0.1097	0.9968	0.8373	5.9800e-003		0.0758	0.0758		0.0758	0.0758	0.0000	1,085.1223	1,085.1223	0.0208	0.0199	1,091.5707

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Land Use	kBTU/yr	tons/yr										MT/yr						
General Heavy Industry	1.39286e+006	7.5100e-003	0.0683	0.0574	4.1000e-004		5.1900e-003	5.1900e-003		5.1900e-003	5.1900e-003	0.0000	74.3285	74.3285	1.4200e-003	1.3600e-003	74.7702	
Office Park	1.89416e+007	0.1021	0.9285	0.7800	5.5700e-003		0.0706	0.0706		0.0706	0.0706	0.0000	1,010.7938	1,010.7938	0.0194	0.0185	1,016.8004	
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Unenclosed Parking with Elevators	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Total		0.1097	0.9968	0.8373	5.9800e-003		0.0758	0.0758		0.0758	0.0758	0.0000	1,085.1223	1,085.1223	0.0208	0.0199	1,091.5707	

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Land Use	kBTU/yr	tons/yr										MT/yr						
General Heavy Industry	1.34083e+006	7.2300e-003	0.0657	0.0552	3.9000e-004		5.0000e-003	5.0000e-003		5.0000e-003	5.0000e-003	0.0000	71.5518	71.5518	1.3700e-003	1.3100e-003	71.9770	
Office Park	1.79986e+007	0.0971	0.8823	0.7411	5.2900e-003		0.0671	0.0671		0.0671	0.0671	0.0000	960.4765	960.4765	0.0184	0.0176	966.1841	
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Unenclosed Parking with Elevators	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Total		0.1043	0.9480	0.7963	5.6800e-003		0.0721	0.0721		0.0721	0.0721	0.0000	1,032.0283	1,032.0283	0.0198	0.0189	1,038.1611	

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	436128	57.3691	5.7400e-003	1.1900e-003	57.8662
Office Park	2.03689e+007	2,679.3680	0.2679	0.0554	2,702.5861
Parking Lot	100240	13.1858	1.3200e-003	2.7000e-004	13.3000
Unenclosed Parking with Elevators	735541	96.7544	9.6800e-003	2.0000e-003	97.5928
Total		2,846.6773	0.2847	0.0589	2,871.3452

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	-24610.4	-3.2373	-0.0003	-0.0001	-3.2654
Office Park	1.93394e+007	2,543.9387	0.2544	0.0526	2,565.9832
Parking Lot	-353472	-46.4963	-0.0047	-0.0010	-46.8993
Unenclosed Parking with Elevators	253666	33.3677	3.3400e-003	6.9000e-004	33.6568
Total		2,527.5727	0.2528	0.0523	2,549.4755

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	tons/yr										MT/yr						
Mitigated	4.9052	2.1000e-004	0.0234	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0458	0.0458	1.2000e-004	0.0000	0.0488	
Unmitigated	4.9052	2.1000e-004	0.0234	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0458	0.0458	1.2000e-004	0.0000	0.0488	

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	0.5847					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Consumer Products	4.3183					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Landscaping	2.1400e-003	2.1000e-004	0.0234	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0458	0.0458	1.2000e-004	0.0000	0.0488	
Total	4.9052	2.1000e-004	0.0234	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0458	0.0458	1.2000e-004	0.0000	0.0488	

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
SubCategory	tons/yr											MT/yr					
Architectural Coating	0.5847						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.3183						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.1400e-003	2.1000e-004	0.0234	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0458	0.0458	1.2000e-004	0.0000	0.0488	
Total	4.9052	2.1000e-004	0.0234	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0458	0.0458	1.2000e-004	0.0000	0.0488	

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	217.3322	0.2084	0.1248	259.7449
Unmitigated	262.5862	0.2596	0.1559	315.5234

7.2 Water by Land Use

Unmitigated

	Indoor/Out door Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	12.21 / 0	13.0107	0.0157	9.5700e- 003	16.2572
Office Park	185.179 / 113.497	249.5755	0.2439	0.1463	299.2662
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking with Elevators	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		262.5862	0.2597	0.1559	315.5234

Mitigated

	Indoor/Out door Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	9.768 / 0	10.4085	0.0126	7.6600e- 003	13.0058
Office Park	148.143 / 106.574	206.9236	0.1959	0.1172	246.7391
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking with Elevators	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		217.3322	0.2084	0.1248	259.7449

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
MT/yr				
Mitigated	486.8677	28.7731	0.0000	1,206.1942
Unmitigated	486.8677	28.7731	0.0000	1,206.1942

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
MT/yr					
General Heavy Industry	65.47	13.2898	0.7854	0.0000	32.9250
Office Park	2333	473.5779	27.9877	0.0000	1,173.2692
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Total		486.8677	28.7731	0.0000	1,206.1942

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	65.47	13.2898	0.7854	0.0000	32.9250
Office Park	2333	473.5779	27.9877	0.0000	1,173.2692
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking with Elevation	0	0.0000	0.0000	0.0000	0.0000
Total		486.8677	28.7731	0.0000	1,206.1942

9.0 Operational Offroad

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

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	2	0	50	2000	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
Boiler	9	0	0	0	CNG

User Defined Equipment

Equipment Type	Number
----------------	--------

10.1 Stationary Sources

Unmitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Equipment Type	tons/yr										MT/yr						
Boiler - CNG (0 - 2 MMBTU)	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Emergency Generator - Diesel (750,0000 HP)	0.1641	0.7339	0.4184	7.9000e-004		0.0241	0.0241		0.0241	0.0241	0.0000	76.1594	76.1594	0.0107	0.0000	76.4264	
Total	0.1641	0.7339	0.4184	7.9000e-004		0.0241	0.0241		0.0241	0.0241	0.0000	76.1594	76.1594	0.0107	0.0000	76.4264	

11.0 Vegetation

Operational Emissions

Existing Uses

Existing 100-200 Caribbean Uses - Santa Clara County, Annual

Existing 100-200 Caribbean Uses
Santa Clara County, Annual

1.0 Project Characteristics**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	25.20	1000sqft	0.58	25,200.00	0
General Light Industry	50.88	1000sqft	1.17	50,880.00	0
Unrefrigerated Warehouse-No Rail	108.51	1000sqft	2.49	108,510.00	0
Manufacturing	125.64	1000sqft	2.88	125,640.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	58
Climate Zone	4			Operational Year	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E 2020 rate

Land Use - Based on traffic report land uses

Construction Phase - Operational only

Off-road Equipment - Operational only

Demolition -

Vehicle Trips - assume default conditions LI=4.64,0.88,0.45 off=10.39,2.32,0.99war=2.59,2.59,2.59Man=4.33,1.13,0.47

Energy Use - historical use

Water And Wastewater - wtp treatment

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	0.00
tblConstructionPhase	PhaseEndDate	5/15/2018	5/1/2018
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblTripsAndVMT	WorkerTripNumber	0.00	18.00
tblVehicleTrips	ST_TR	1.32	0.88
tblVehicleTrips	ST_TR	2.46	2.32
tblVehicleTrips	ST_TR	1.49	1.13
tblVehicleTrips	ST_TR	1.68	2.59
tblVehicleTrips	SU_TR	0.68	0.45
tblVehicleTrips	SU_TR	1.05	0.99
tblVehicleTrips	SU_TR	0.62	0.47
tblVehicleTrips	SU_TR	1.68	2.59
tblVehicleTrips	WD_TR	6.97	4.64
tblVehicleTrips	WD_TR	11.03	10.39
tblVehicleTrips	WD_TR	3.82	4.33
tblVehicleTrips	WD_TR	1.68	2.59
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPerce nt	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPerce nt	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPerce nt	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPerce nt	2.21	0.00

tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	tons/yr											MT/yr					
Area	1.3736	3.0000e-005	2.8500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.5400e-003	5.5400e-003	1.0000e-005	0.0000	5.9100e-003	
Energy	0.0331	0.3005	0.2524	1.8000e-003		0.0228	0.0228		0.0228	0.0228	0.0000	672.1952	672.1952	0.0408	0.0131	677.1295	
Mobile	0.2460	0.9575	3.1325	0.0117	1.1285	8.9500e-003	1.1374	0.3021	8.3400e-003	0.3104	0.0000	1,068.0340	1,068.0340	0.0329	0.0000	1,068.8574	
Waste						0.0000	0.0000		0.0000	0.0000	69.8939	0.0000	69.8939	4.1306	0.0000	173.1591	
Water						0.0000	0.0000		0.0000	0.0000	24.9048	51.3670	76.2718	0.0909	0.0552	94.9996	
Total	1.6527	1.2580	3.3877	0.0135	1.1285	0.0318	1.1603	0.3021	0.0312	0.3333	94.7987	1,791.6017	1,886.4004	4.2952	0.0684	2,014.1514	

Mitigated Operational

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

Category	tons/yr												MT/yr					
	Area	1.3736	3.0000e-005	2.8500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.5400e-003	5.5400e-003	1.0000e-005	0.0000	5.9100e-003	
Energy	0.0331	0.3005	0.2524	1.8000e-003		0.0228	0.0228		0.0228	0.0228	0.0000	672.1952	672.1952	0.0408	0.0131	677.1295		
Mobile	0.2460	0.9575	3.1325	0.0117	1.1285	8.9500e-003	1.1374	0.3021	8.3400e-003	0.3104	0.0000	1,068.0340	1,068.0340	0.0329	0.0000	1,068.8574		
Waste						0.0000	0.0000		0.0000	0.0000	69.8939	0.0000	69.8939	4.1306	0.0000	173.1591		
Water						0.0000	0.0000		0.0000	0.0000	24.9048	51.3670	76.2718	0.0909	0.0552	94.9996		
Total	1.6527	1.2580	3.3877	0.0135	1.1285	0.0318	1.1603	0.3021	0.0312	0.3333	94.7987	1,791.6017	1,886.4004	4.2952	0.0684	2,014.1514		

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

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2460	0.9575	3.1325	0.0117	1.1285	8.9500e-003	1.1374	0.3021	8.3400e-003	0.3104	0.0000	1,068.0340	1,068.0340	0.0329	0.0000	1,068.8574
Unmitigated	0.2460	0.9575	3.1325	0.0117	1.1285	8.9500e-003	1.1374	0.3021	8.3400e-003	0.3104	0.0000	1,068.0340	1,068.0340	0.0329	0.0000	1,068.8574

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated		Mitigated	
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT		
General Light Industry	236.08	44.77	22.90	520,543	520,543		
General Office Building	261.83	58.46	24.95	475,408	475,408		
Manufacturing	544.02	141.97	59.05	1,218,325	1,218,325		
Unrefrigerated Warehouse-No Rail	281.04	281.04	281.04	820,502	820,502		
Total	1,322.97	526.25	387.94	3,034,778	3,034,778		

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Manufacturing	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
Unrefrigerated Warehouse-No Rail	9.50	7.30	7.30	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.612822	0.036208	0.182365	0.105071	0.013933	0.005011	0.012748	0.021514	0.002168	0.001529	0.005280	0.000629	0.000720
General Office Building	0.612822	0.036208	0.182365	0.105071	0.013933	0.005011	0.012748	0.021514	0.002168	0.001529	0.005280	0.000629	0.000720
Manufacturing	0.612822	0.036208	0.182365	0.105071	0.013933	0.005011	0.012748	0.021514	0.002168	0.001529	0.005280	0.000629	0.000720
Unrefrigerated Warehouse-No Rail	0.612822	0.036208	0.182365	0.105071	0.013933	0.005011	0.012748	0.021514	0.002168	0.001529	0.005280	0.000629	0.000720

5.0 Energy Detail

Historical Energy Use: Y

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	tons/yr										MT/yr						
Electricity Mitigated							0.0000	0.0000		0.0000	0.0000	345.0996	345.0996	0.0345	7.1400e-003	348.0901	
Electricity Unmitigated							0.0000	0.0000		0.0000	0.0000	345.0996	345.0996	0.0345	7.1400e-003	348.0901	
NaturalGas Mitigated	0.0331	0.3005	0.2524	1.8000e-003		0.0228	0.0228		0.0228	0.0228	0.0000	327.0956	327.0956	6.2700e-003	6.0000e-003	329.0394	
NaturalGas Unmitigated	0.0331	0.3005	0.2524	1.8000e-003		0.0228	0.0228		0.0228	0.0228	0.0000	327.0956	327.0956	6.2700e-003	6.0000e-003	329.0394	

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Land Use	kBTU/yr	tons/yr										MT/yr						
General Light Industry	1.48824e+006	8.0200e-003	0.0730	0.0613	4.4000e-004		5.5400e-003	5.5400e-003		5.5400e-003	5.5400e-003	0.0000	79.4182	79.4182	1.5200e-003	1.4600e-003	79.8901	
General Office Building	502992	2.7100e-003	0.0247	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003	0.0000	26.8416	26.8416	5.1000e-004	4.9000e-004	27.0011	
Manufacturing	3.67497e+006	0.0198	0.1802	0.1513	1.0800e-003		0.0137	0.0137		0.0137	0.0137	0.0000	196.1104	196.1104	3.7600e-003	3.6000e-003	197.2758	
Unrefrigerated Warehouse-No Rail	463338	2.5000e-003	0.0227	0.0191	1.4000e-004		1.7300e-003	1.7300e-003		1.7300e-003	1.7300e-003	0.0000	24.7255	24.7255	4.7000e-004	4.5000e-004	24.8724	
Total		0.0331	0.3005	0.2524	1.8100e-003		0.0228	0.0228		0.0228	0.0228	0.0000	327.0956	327.0956	6.2600e-003	6.0000e-003	329.0394	

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Land Use	kBTU/yr	tons/yr										MT/yr						
General Light Industry	1.48824e+006	8.0200e-003	0.0730	0.0613	4.4000e-004		5.5400e-003	5.5400e-003		5.5400e-003	5.5400e-003	0.0000	79.4182	79.4182	1.5200e-003	1.4600e-003	79.8901	
General Office Building	502992	2.7100e-003	0.0247	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003	0.0000	26.8416	26.8416	5.1000e-004	4.9000e-004	27.0011	
Manufacturing	3.67497e+006	0.0198	0.1802	0.1513	1.0800e-003		0.0137	0.0137		0.0137	0.0137	0.0000	196.1104	196.1104	3.7600e-003	3.6000e-003	197.2758	
Unrefrigerated Warehouse-No Rail	463338	2.5000e-003	0.0227	0.0191	1.4000e-004		1.7300e-003	1.7300e-003		1.7300e-003	1.7300e-003	0.0000	24.7255	24.7255	4.7000e-004	4.5000e-004	24.8724	
Total		0.0331	0.3005	0.2524	1.8100e-003		0.0228	0.0228		0.0228	0.0228	0.0000	327.0956	327.0956	6.2600e-003	6.0000e-003	329.0394	

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	479798	63.1135	6.3100e-003	1.3100e-003	63.6605
General Office Building	518364	68.1865	6.8200e-003	1.4100e-003	68.7774
Manufacturing	1.18479e+006	155.8488	0.0156	3.2200e-003	157.1993
Unrefrigerated Warehouse-No Rail	440551	57.9508	5.8000e-003	1.2000e-003	58.4530
Total		345.0996	0.0345	7.1400e-003	348.0901

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	479798	63.1135	6.3100e-003	1.3100e-003	63.6605
General Office Building	518364	68.1865	6.8200e-003	1.4100e-003	68.7774
Manufacturing	1.18479e+006	155.8488	0.0156	3.2200e-003	157.1993
Unrefrigerated Warehouse-No Rail	440551	57.9508	5.8000e-003	1.2000e-003	58.4530
Total		345.0996	0.0345	7.1400e-003	348.0901

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.3736	3.0000e-005	2.8500e-003	0.0000			1.0000e-005	1.0000e-005		1.0000e-005	0.0000	5.5400e-003	5.5400e-003	1.0000e-005	0.0000	5.9100e-003
Unmitigated	1.3736	3.0000e-005	2.8500e-003	0.0000			1.0000e-005	1.0000e-005		1.0000e-005	0.0000	5.5400e-003	5.5400e-003	1.0000e-005	0.0000	5.9100e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
SubCategory	tons/yr										MT/yr						
Architectural Coating	0.1618						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Consumer Products	1.2116						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Landscaping	2.6000e-004	3.0000e-005	2.8500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.5400e-003	5.5400e-003	1.0000e-005	0.0000	5.9100e-003	
Total	1.3736	3.0000e-005	2.8500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.5400e-003	5.5400e-003	1.0000e-005	0.0000	5.9100e-003	

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
SubCategory	tons/yr										MT/yr						
Architectural Coating	0.1618						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Consumer Products	1.2116						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Landscaping	2.6000e-004	3.0000e-005	2.8500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.5400e-003	5.5400e-003	1.0000e-005	0.0000	5.9100e-003	
Total	1.3736	3.0000e-005	2.8500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.5400e-003	5.5400e-003	1.0000e-005	0.0000	5.9100e-003	

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	76.2718	0.0909	0.0552	94.9996
Unmitigated	76.2718	0.0909	0.0552	94.9996

7.2 Water by Land Use

Unmitigated

	Indoor/Out door Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	11.766 / 0	12.5376	0.0152	9.2300e- 003	15.6661
General Office Building	4.47889 / 2.74513	6.0364	5.9000e- 003	3.5400e- 003	7.2383
Manufacturing	29.0543 / 0	30.9595	0.0375	0.0228	38.6848
Unrefrigerated Warehouse-No Rail	25.0929 / 0	26.7384	0.0323	0.0197	33.4104
Total		76.2718	0.0909	0.0552	94.9996

Mitigated

	Indoor/Out door Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			

General Light Industry	11.766 / 0	12.5376	0.0152	9.2300e-003	15.6661
General Office Building	4.47889 / 2.74513	6.0364	5.9000e-003	3.5400e-003	7.2383
Manufacturing	29.0543 / 0	30.9595	0.0375	0.0228	38.6848
Unrefrigerated Warehouse-No Rail	25.0929 / 0	26.7384	0.0323	0.0197	33.4104
Total		76.2718	0.0909	0.0552	94.9996

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
MT/yr				
Mitigated	69.8939	4.1306	0.0000	173.1591
Unmitigated	69.8939	4.1306	0.0000	173.1591

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
tons					
Land Use					

General Light Industry	63.09	12.8067	0.7569	0.0000	31.7281
General Office Building	23.44	4.7581	0.2812	0.0000	11.7880
Manufacturing	155.79	31.6240	1.8689	0.0000	78.3470
Unrefrigerated Warehouse-No Rail	102	20.7051	1.2236	0.0000	51.2960
Total		69.8939	4.1306	0.0000	173.1591

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	63.09	12.8067	0.7569	0.0000	31.7281
General Office Building	23.44	4.7581	0.2812	0.0000	11.7880
Manufacturing	155.79	31.6240	1.8689	0.0000	78.3470
Unrefrigerated Warehouse-No Rail	102	20.7051	1.2236	0.0000	51.2960
Total		69.8939	4.1306	0.0000	173.1591

9.0 Operational Offroad

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

Fire Pumps and Emergency Generators

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

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

Equipment Type	Number
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11.0 Vegetation

Table 10. Project Trip Generation Volumes

Land Use Category	ITE Code	Units	Quantity	Daily Trips	Weekday AM Peak Hour Trips			Weekday PM Peak Hour Trips			
					Total	In	Out	Total	In	Out	
Proposed Office Buildings	710 ¹	KSF ³	1,041.890	10,305	1,006	865	141	1,056	169	887	
				<i>12.5% Standard Trip Reduction⁴</i>	-1,288	-126	-108	-18	-132	-21	-111
				Net Total Proposed Office Buildings Trips	9,017	880	757	123	924	148	776
Proposed Utility Plant	170 ²	KSF	52.796	700	122	98	24	120	24	96	
				<i>12.5% Standard Trip Reduction⁴</i>	-88	-15	-12	-3	-15	-3	-12
				Net Total Proposed Utility Plant Trips	612	107	86	21	105	21	84
Existing Office Building (1330-1338 Bordeaux Drive)	710 ¹	KSF	-25.200	-279	-50	-43	-7	-31	-5	-26	
				<i>6% Standard Trip Reduction⁵</i>	17	3	3	0	2	0	2
Existing Light Industrial (1393-1395 Borregas Avenue)	110 ¹	KSF	-50.880	-251	-27	-24	-3	-23	-3	-20	
				<i>6% Standard Trip Reduction⁵</i>	15	2	1	1	1	0	1
Existing Warehousing (1383 Borregas Avenue)	150 ¹	KSF	-54.501	-132	-32	-26	-6	-34	-7	-27	
				<i>6% Standard Trip Reduction⁵</i>	8	2	2	0	2	0	2
Existing Manufacturing (360-364 & 370-376 Caribbean Drive)	140 ²	KSF	-125.643	-557	-78	-60	-18	-84	-26	-58	
Existing Warehousing (380-382 Caribbean Drive)	150 ¹	KSF	-54.000	-131	-32	-25	-7	-34	-9	-25	
				Net Total Existing Buildings Trips	-1,310	-212	-172	-40	-201	-50	-151
Net New Project Trip Generation					8,319	775	671	104	828	119	709

Notes: ¹The trip rates used for this ITE Code were based on ITE Trip Generation (10th Edition) fitted curve equations.

²The trip rates used for this ITE Code were based on ITE Trip Generation (10th Edition) average rates.

³KSF = 1,000 Sq. feet gross floor area

⁴Standard Trip Reduction based on VTA TIA Guidelines. Strategies assumed: TDM Financial Incentives, TDM Shuttle Program, Employment within 2,000 foot walk of a Light Rail Station.

⁵Standard Trip Reduction based on VTA TIA Guidelines. Strategies assumed: Employment within 2,000 foot walk of a Light Rail Station.

As illustrated in **Table 10**, the proposed Project is anticipated to generate a total of 8,319 daily trips, 775 AM peak hour trips (671 inbound, 104 outbound), and 828 PM peak hour trips (119 inbound, 709 outbound) under typical traffic demand conditions. These trips would be considered “new” (or incremental) trips on the City’s immediate local circulation system.

3.2.2 Project Trip Distribution and Assignment

The Project trip distribution was based on existing conditions traffic volumes and patterns, engineering judgement, and distributions from recently approved traffic studies for similar proposed developments in the Moffett Park Specific Plan area, including the *1111 Lockheed Martin Way TIA* (Kimley Horn, November 2015) and the *Moffett Place TIA* (Fehr & Peers, August 2013). **Figure 8** illustrates the estimated Project directional trip distribution and assignment patterns projected to be

Attachment 2: Climate Action Plan CEQA Checklist

Summary

This checklist identifies the minimum criteria a project must demonstrate to use the City's CAP for purposes of streamlining the analysis of greenhouse gas emissions under CEQA. Minimum criteria outlined below includes: 1) consistency with CAP forecasts, and 2) incorporation of applicable Near-Term (prior to 2016) strategies and measures from the CAP as binding and enforceable components of the project.

Section 1: Consistency with CAP Forecasts

The CAP's achievement of the 15% reduction below 2008 target is based on growth assumptions in the City's General Plan and regional growth forecasts. For eligibility to streamline from the CAP for purposes of an environmental analysis, projects must demonstrate consistency with CAP forecast assumptions using the criteria listed below. As appropriate, these criteria should be cited as evidence in any subsequent environmental document.

1A. Does the project include large stationary emissions sources that would be regulated by the Air District?

Yes No

If no, then the project may be eligible to claim consistency with growth assumptions that were used for CAP modeling. Skip to question 1C to determine consistency with CAP forecasts.

If yes, the project may trigger additional changes to the physical environment that were not considered in the CAP and would otherwise be regulated by the Bay Area Air Quality Management District. Complete 1B.

1B. If this project is a stationary source emitter as outlined under 1A, does it also include any of the following emissions sources?

Residential uses	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Commercial uses	<input type="checkbox"/> Yes	<input type="checkbox"/> No

If no, the project does not include any emissions sources that were assumed in CAP growth forecasts. Therefore, the project may trigger additional changes to the physical environment that were not considered in the CAP. CAP measures may be used to mitigate GHG emissions, but project-level analysis of GHG emissions using the California Emissions Estimator Model (CALEEMod) or another method must be prepared by a qualified air quality consultant.

If yes, the project may include emissions sources mitigated by the CAP. Therefore, any sources identified in 1B may be eligible to claim consistency with the CAP. All stationary sources regulated by the Bay Area Air Quality Management District shall be analyzed separately. Other sources that were analyzed in the CAP may still qualify for streamlining, should the project demonstrate consistency with the CAP as outlined in 1C and following sections below.

1C. Does the project trigger an amendment to or adoption of any of the following planning documents?

General Plan	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
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Specific Plan	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Precise Plan for El Camino Real	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

Please describe any amendments or adoption of new specific plans or special planning areas, as applicable:

If no, then the project is eligible to claim consistency with growth assumptions that were used for CAP forecasts.

If yes, the project would trigger an amendment to or adoption of one or more of the documents list above, complete 1D below.

1D. If the project triggers an amendment to the General Plan, specific plans, and/or special planning areas, complete the following table:

	Existing & Proposed Project			Proposed Project's Net Effect on Citywide Forecasts		
	Existing or Allowed Under Existing Zoning (A)	Proposed Project (B)	Net Change from Existing Zoning (C=B-A)	2020 CAP Forecast (D)	Proposed Project's Net Effect on Citywide 2020 Forecast (E = D+C)	Would Net Effect of Project Exceed the Citywide 2020 CAP Forecast?
Population						
Jobs						
Households / Dwelling Units						

Please describe any assumptions used to calculate existing, allowed, or proposed conditions:

If no for all indicators above, then the project may be eligible to claim consistency with CAP growth assumptions. The project's assumed residents, employees, and households would not create a net increase on community-wide growth assumed in the CAP. The CAP uses these community-wide growth indicators to forecast community-wide emissions from residential energy use, nonresidential energy use, water-related emissions, and waste. Because the CAP uses these comparable indicators to forecast non-transportation related emissions, and the project would not exceed the CAP's assumed 2020 residents, employees, and dwelling units, the project's non-transportation emissions are therefore consistent with CAP growth assumptions and captured within the CAP's emissions forecast. Complete **1E** below.

If yes to one or more indicators above, the proposed project's net effect on citywide 2020 forecasts would exceed the 2020 CAP forecast assumptions. Therefore, the project may trigger additional emissions not assumed in CAP growth forecasts.

Any projects that exceed the 2020 forecasts may still rely on the CAP for identification of measures and standards for mitigation. However, since such projects exceed the assumptions of the CAP forecast, it is recommended that the project demonstrate anticipated project-level GHG emissions estimates using CALEEMod or another tool. (estimates prepared by consultant).

- SEE AIR QUALITY ANALYSIS for GHG emissions assessment that shows the project level increase is less than significant because it does not exceed the most stringent BAAQMD project level emission threshold of 1,100 metric tons of CO₂e per year.

1E. If the project is consistent with CAP growth forecasts as identified in 1D above, provide the following information.

Would the project have a potentially significant impact after mitigation on any of the following standards of significance identified in the State CEQA Guidelines, Appendix G?

a) Conflict with an applicable plan, program, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
c) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

If yes to one or more standards above, the proposed project's net effect on citywide 2020 forecasts is inconsistent with plans, programs, or policies that informed the assumptions for the 2020 transportation forecast. Therefore, the project is inconsistent with transportation emissions forecasts and is not eligible to claim consistency with the CAP for purposes of GHG emissions and impacts on climate change.

If no for all standards above, then the project is consistent with the plans, programs, policies, or ordinances that informed the travel demand model for the 2020 transportation forecast of the CAP. Therefore, the project is consistent with CAP growth assumptions for transportation emissions in the CAP and is eligible to claim consistency with CAP transportation forecasts.

Section 2: Consistency with CAP Measures

The CAP provides measures that achieve a 15% reduction below 2008 emissions levels by 2020. Each of the measures contains a bulleted list of action items/project standards that help projects achieve that goal. Projects that wish to demonstrate consistency with the CAP must demonstrate consistency with all applicable measures and action items/project standards from the CAP. Consistency with all applicable measures should be cited as evidence to support tiering from the CAP.

2A. Using the action items/project standards identified on the following pages, identify all measures and action items/project standards that are applicable to the project. Identify applicability and project compliance with each action item/project standard.

If a project demonstrates all applicable mandatory standards, the project is eligible to claim consistency with CAP measures and is eligible for CAP streamlining.

If a project does not integrate all applicable mandatory standards, the project is ineligible to claim consistency with CAP measures and is not eligible for CAP streamlining.

Additional voluntary measures may also be recommended. Projects inconsistent with growth forecasts should consider integrating all feasible voluntary and mandatory CAP measures.

Standards for Climate Action Plan Consistency/Private Development

(Includes Near-Term Action Items and Action Items Already Implemented by the City)

Applicable? (Yes or No)	Measure	Action Item/Project Standard	Describe whether standards are applicable and how the project demonstrates consistency with applicable standards
Yes	OS-2	Provide availability and access to outdoor space for recreation or social purposes, including access to public open spaces on privately owned property such as retail shopping centers	
Yes	OS-3.1	Continue to implement the City's Tree Preservation requirements.	The project would be subject to City requirements

Yes	EC-2.2	Continue to require energy-efficient siting of buildings. Buildings should be oriented and landscape material should be selected to provide maximum energy efficiency for the buildings	The project would be subject to City and State requirements
Yes	WC-2.3	Require new open space and street trees to be drought-tolerant	The landscape plans provide for trees and water-conserving plants
No	LW-2.1	Require multi-family homes to participate in the City's Multi-family Recycling Program	
Yes	LW-2.2	Select materials to be targeted for diversion methods, services or technologies based on the results of the Zero Waste Strategic Plan	The Zero Waste Strategic Plan is already being implemented.
Yes	CA-1.7	Actively promote the use of alternative modes of transportation as safe modes of travel. When applicable, promote viable programs sponsored by 511.org, the BAAQMD and other recognized agencies on the City's website and publications	Project would implement a TDM Program acceptable to the City
No	CTO-1.1	Incorporate the provisions of AB 1358, the California Complete Streets Act of 2008, into roadway design, construction and maintenance activities	
No	CTO-1.2	Implement the street space allocation policy (RTC 8-085, April 28, 2009) in coordination with road reconstruction or resurfacing projects to provide road configurations that accommodate all travel modes.	
Yes	CTO-1.3	Require new development to provide cross-parcel access and linkages from the development entrance to the public sidewalk system, transit stops, nearby employment and shopping centers, schools, parks and other parcels for ease of pedestrian and cyclist access	Included in project design/concept
Yes	CTO-1.4	Improve pedestrian safety and comfort through design elements such as landscaped medians, pedestrian-level amenities, sidewalk	Included in project design/concept. The project would be subject to City and requirements

		improvements and compliance with ADA design standards, particularly for areas serving high volumes of traffic.	
No	CTO-1.5	Improve bicycle facilities and perceptions of comfort through pavement marking/coloring, physical separation, specialized signs and markings and other design elements.	
Yes	CTO-1.6	Require sidewalks to be a minimum of 6 feet wide in order to allow side-by-side walking at identified locations that currently serve high pedestrian traffic volumes or locations planned to serve high volumes of pedestrian traffic.	The project would be subject to City and requirements
Yes	CTO-2.1	Require public areas and new development to provide bicycle parking consistent with the VTA Bicycle Technical Guidelines, as amended.	Included in project design/concept. The project would provide secure bicycle parking spots
No	CTO-3.1	Continue sponsoring projects to provide transit rider amenities at bus stops and rail stations.	
Yes	CTO-4.1	Require existing and future major employers to utilize a variety of transportation demand management measures such as flexible work schedules, telecommuting, guaranteed rides home, low or no cost transit passes, parking "cash-out" incentives and other programs that provide employees with alternatives to single-occupant commutes.	Project would implement a TDM Program acceptable to the City
Yes	EP-2.3	Prevent buildings and additions from shading more than 10% of roofs of other structures.	A solar study will be required per City standards during the SDP process.
Yes	EP-2.3	Continue to allow and encourage solar facilities above paved parking areas.	Solar power being designed into project
Yes	OR-1.3	In project review, encourage the replacement of high-maintenance landscapes (like grass turf) with native vegetation to reduce the need for gas-powered lawn and garden equipment.	The project is required to comply with the Water-Efficient Landscaping requirements, and details will be finalized during the SDP review process.