SANTA CLARA UNIVERSITY HOUSING AIR QUALITY & GREENHOUSE GAS ASSESSMENT

San José, California

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Introduction

The purpose of this report is to address air quality impacts and compute greenhouse gas (GHG) emissions associated with a new Santa Clara University (SCU) mixed-use project located at 1200, 1202, and 1250 Campbell Avenue in San José, California. The air quality impacts and GHG emissions would be associated with the demolition of the existing uses at the site, construction of the new building and infrastructure, and operation of the project. Air pollutant and GHG emissions associated with the construction and operation of the project were predicted using models. In addition, the potential construction health risk impact to nearby sensitive receptors and the impact of existing toxic air contaminant (TAC) sources affecting the proposed residences were evaluated. This analysis addresses those issues following the guidance provided by the Bay Area Air Quality Management District (BAAQMD).[1]

Project Description

The project site is currently developed with three industrial buildings totaling approximately 44,100 square feet (sf). The project proposes to demolish existing structures on the 2.99-acre site and construct a seven-story mixed-use building with 290 residential units and 54,000-sf of technology incubator (office) space. Parking would be provided within a three-story above grade parking garage with 389 spaces. On the first and second floors, the incubator space and residential lobbies would wrap around the parking garage. On the third floor, the residential units would wrap around the parking garage. The residential housing portion of the project is intended to provide affordable housing options for faculty and staff at SCU and other Jesuit educational institutions. The technology incubator space would only serve staff and students at SCU.

Setting

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

Air Pollutants of Concern

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

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

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

micrometers or less ($PM_{2.5}$). Elevated concentrations of PM_{10} and $PM_{2.5}$ are the result of both region-wide (or cumulative) emissions and localized emissions. High particulate matter levels aggravate respiratory and cardiovascular diseases, reduce lung function, increase mortality (e.g., lung cancer), and result in reduced lung function growth in children.

Toxic Air Contaminants

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

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

Sensitive Receptors

There are groups of people more affected by air pollution than others. CARB has identified the following persons who are most likely to be affected by air pollution: children under 16, the elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive receptors. Locations that may contain a high concentration of these sensitive population groups include residential areas, hospitals, daycare facilities, elder care facilities, and elementary schools. For cancer risk assessments, children are the most sensitive receptors, since they are more susceptible to cancer causing TACs. Residential locations are assumed to include infants and small children. The project would introduce new sensitive receptors in the form of residences. In addition, the closest sensitive receptors to the project site are the adjacent single-family residences to the east of the project site.

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

Regulatory Agencies

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

Regulatory Setting

Federal Regulations

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

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

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

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

[3] USEPA, 2000. *Regulatory Announcement, Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements*. EPA420-F-00-057. December.

State Regulations

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

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

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

Bay Area Air Quality Management District (BAAQMD)

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

BAAQMD is the lead agency in developing plans to address attainment and maintenance of the National Ambient Air Quality Standards and California Ambient Air Quality Standards. The District also has permit authority over most types of stationary equipment utilized for the proposed project. The BAAQMD is responsible for permitting and inspection of stationary sources;

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

enforcement of regulations, including setting fees, levying fines, and enforcement actions; and ensuring that public nuisances are minimized.

The BAAQMD California Environmental Quality Act (*CEQA) Air Quality Guidelines*[5] were prepared to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area. The guidelines provide recommended procedures for evaluating potential air impacts during the environmental review process consistent with CEQA requirements including thresholds of significance, mitigation measures, and background air quality information. They also include assessment methodologies for air toxics, odors, and greenhouse gas emissions.

San José Envision 2040 General Plan

The San José Envision 2040 General Plan includes goals, policies, and actions to reduce exposure of the City's sensitive population to exposure of air pollution and toxic air contaminants or TACs. The following goals, policies, and actions are applicable to the proposed project:

Applicable Goals – Toxic Air Contaminants

Goal MS-11 Minimize exposure of people to air pollution and toxic air contaminants such as ozone, carbon monoxide, lead, and particulate matter.

Applicable Policies – Toxic Air Contaminants

MS-11.1 Require completion of air quality modeling for sensitive land uses such as new residential developments that are located near sources of pollution such as freeways and industrial uses. Require new residential development projects and projects categorized as sensitive receptors to incorporate effective mitigation into project designs or be located an adequate distance from sources of toxic air contaminants (TACs) to avoid significant risks to health and safety.

MS-11.4 Encourage the installation of appropriate air filtration at existing schools, residences, and other sensitive receptor uses adversely affected by pollution sources.

MS-11.5 Encourage the use of pollution absorbing trees and vegetation in buffer areas between substantial sources of TACs and sensitive land uses.

Actions – Toxic Air Contaminants

MS-11.7 Consult with BAAQMD to identify stationary and mobile TAC sources and determine the need for and requirements of a health risk assessment for proposed developments.

Significance Thresholds

In June 2010, BAAQMD adopted thresholds of significance to assist in the review of projects under CEQA and these significance thresholds were contained in the District's 2011 *CEQA Air Quality Guidelines*. These thresholds were designed to establish the level at which BAAQMD

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

believed air pollution emissions would cause significant environmental impacts under CEQA. The thresholds were challenged through a series of court challenges and were mostly upheld. BAAQMD updated the *CEQA Air Quality Guidelines* in 2017 to include the latest significance thresholds that were used in this analysis are summarized in Table 1. The City's 2040 General Plan includes a policy to reduce exposure of new sensitive receptors to hazardous pollutants (Guiding Policy 12.6-G-1). Therefore, the effect of existing air pollutant and TAC sources upon the project site was assessed.

Table 1. 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	>10.0 per one million	>100 per one million	
Hazard Index	>1.0	>10.0	
Incremental annual $PM_{2.5}$	>0.3 $\mu g/m^3$	>0.8 $\mu g/m^3$	
Greenhouse Gas Emissions			
Land Use Projects – direct and indirect emissions	Compliance with a Qualified GHG Reduction Strategy OR 1,100 metric tons annually or 4.6 metric tons per capita (for 2020) 660 metric tons annually or 2.6 metric tons per capita (for 2030) *		

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

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

Air Quality Impacts and Mitigation Measures

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

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

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

Construction period emissions

CalEEMod provided annual emissions for construction and estimates emissions for both on-site and off-site construction activities. On-site activities are primarily made up of construction equipment emissions, while off-site activity includes worker, hauling, and vendor traffic. A construction build-out scenario, including equipment list and schedule, was based on information provided by the project applicant. The proposed project land uses were input into CalEEMod, which included: 290 dwelling units and 380,000-sf entered as "Apartments Mid Rise", 54,000-sf entered as "General Office Building", and 389 spaces entered as "Enclosed Parking with Elevator" all on a 2.99-acre site. In addition, 44,100-sf of existing building demolition, 2,488 cubic yards (cy) of soil imported and 2,269-cy of soil exported during the site preparation phrase, and 17,397-cy of soil exported during the grading phase were entered into the model.

Construction was assumed to begin June 2020 and last 15 months. There were an estimated 309 construction workdays. Average daily emissions were computed by dividing the total construction emissions by the number of construction days. Table 2 shows average daily construction emissions of ROG, NO_X, PM_{10} exhaust, and $PM_{2.5}$ exhaust during construction of the project. As indicated in Table 2, predicted the construction period emissions would not exceed the BAAQMD significance thresholds.

Table 2. Construction Period Emissions

Scenario	ROG	NOx	PM_{10} Exhaust	$PM_{2.5}$ Exhaust
Total construction emissions (tons)	3.5 tons	4.3 tons	0.2 tons	0.2 tons
Average daily emissions (pounds)[1]	22.3 lbs./day	27.6 lbs./day	1.1 lbs./day	1.0 lbs./day
BAAQMD Thresholds (pounds per day)	*54* lbs./day	*54* lbs./day	*82* lbs./day	*54* lbs./day
Exceed Threshold?	No	No	No	No

Notes: [1]Assumes 309 workdays.

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

Operational Period Emissions

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

Land Uses

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

Model Year

Emissions associated with vehicle travel depend on the year of analysis because emission control technology requirements are phased-in over time. Therefore, the earlier the year analyzed in the model, the higher the emission rates utilized by CalEEMod. The earliest the project could possibly be constructed and begin operating would be 2022. Emissions associated with build-out later than 2022 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. The Saturday and Sunday trip rates were assumed to be the weekday rate adjusted by multiplying the ratio of the CalEEMod default rates for Saturday and Sunday trips. The project traffic analysis

provided project trip generation values for the residential and office (i.e. incubator space) land uses.[6] The weekday trip rate used for the residential land use was 4.14 trips per dwelling unit, which included a 3% *Housing and Employment Mixed-Use Reduction,* a 13% *Location Based Reduction (Urban Low-Transit),* and a 10% *VMT Reduction.* The Saturday trip rate for the residential land use was 3.98 trips per unit and the Sunday trip rate was 3.65 trips per unit. The weekday trip rate used for the office land use was 20.00 trips per 1,000-sf, which also included a 3% *Housing and Employment Mixed-Use Reduction,* a 9% *Location Based Reduction (Urban Low-Transit),* and a 13% *VMT Reduction*. The Saturday trip rate for the office land use was 4.46 trips per 1,000-sf and the Sunday trip rate was 1.90 trips per 1,000-sf.

Energy

CalEEMod defaults for energy use were used, which include the 2016 Title 24 Building Standards. Indirect emissions from electricity were computed in CalEEMod. The model has a default rate of 641.3 pounds of CO_2 per megawatt of electricity produced, which is based on PG&E's 2008 emissions rate. The rate was adjusted to account for PG&E's projected 2020 CO_2 intensity rate. This 2020 rate is based, in part, on the requirement of a renewable energy portfolio standard of 33 percent by the year 2020. The derived 2020 rate for PG&E was estimated at 290 pounds of CO_2 per megawatt of electricity delivered.[7] The project would use electricity supplied by San Jose Clean Energy (SJCE) that would provide 100-percent carbon free by 2021 before the project becomes operational.

Other Inputs

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

Existing Uses

A CalEEMod model run was developed to compute emissions from use of the existing building as if it was operating in 2022. The input for this modeling scenario included 44,100-sf entered as "General Light Industry" and 85,000-sf entered as "Parking Lot". This input was applied to the model in the same manner described for the proposed project.

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

[6] Hexagon Transportation Consultants, Inc., "Santa Clara University Residential Development Transportation Analysis", September 2019.
[7] Pacific Gas & Electric, 2015. *Greenhouse Gas Emission Factors: Guidance for PG&E Customers*. November.

Table 3. Operational Emissions

Scenario	ROG	NOx	PM_{10}	$PM_{2.5}$
2022 Project Operational Emissions (*tons/year*)	2.6 tons	2.2 tons	1.8 tons	0.5 tons
2022 Existing Use Emissions (*tons/year*)	0.3 tons	0.3 tons	0.3 tons	0.1 tons
Net Annual Emissions (*tons/year*)	2.3 tons	1.9 tons	1.5 tons	0.4 tons
BAAQMD Thresholds (tons /year)	*10 tons*	*10 tons*	*15 tons*	*10 tons*
Exceed Threshold?	No	No	No	No
2022 Project Operational Emissions (*lbs/day*)[1]	12.5 lbs.	10.1 lbs.	8.3 lbs.	2.4 lbs.
BAAQMD Thresholds (pounds/day)	*54* lbs.	*54* lbs.	*82* lbs.	*54* lbs.
Exceed Threshold?	No	No	No	No

Notes: [1] Assumes 365-day operation.

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

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

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

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

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

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

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

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

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

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

Effectiveness of Mitigation Measure

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

Impact 2: Expose sensitive receptors to substantial pollutant concentrations?

Project impacts related to increased community risk can occur either by introducing a new sensitive receptor, such as a residential use, in proximity to an existing source of TACs or by introducing a new source of TACs with the potential to adversely affect existing sensitive receptors in the project vicinity.

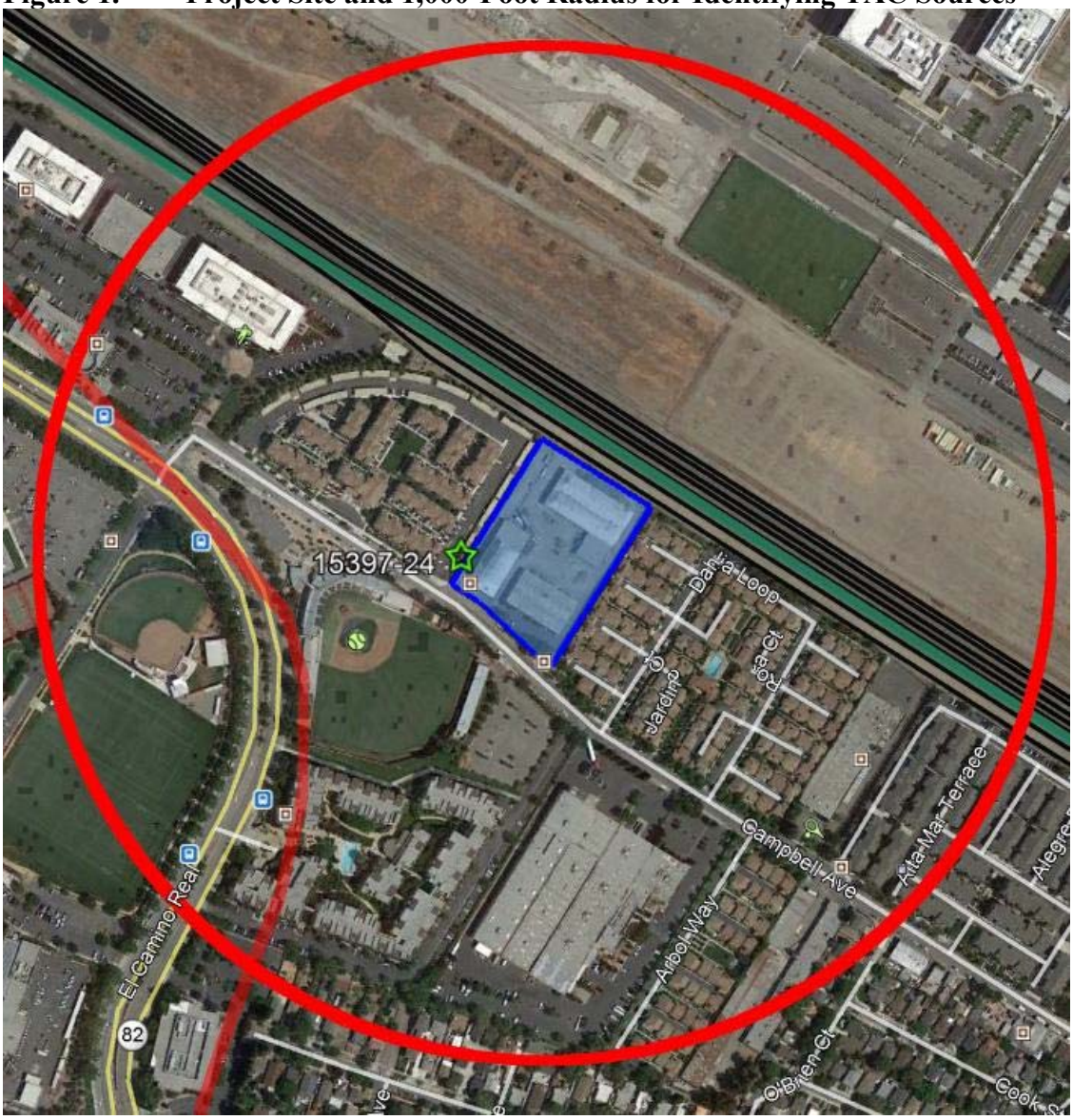
The project would introduce new residents that are sensitive receptors. There are several sources of TACs and localized air pollutants in the vicinity of the project. The impacts of these sources upon the project were assessed. Temporary project construction activity would generate dust and equipment exhaust on a temporary basis that could affect nearby sensitive receptors. A construction health risk assessment was prepared to address construction impacts caused by the project. Operation of the project is not expected to be a source of TAC or localized air pollutant emissions, as the project would not generate substantial truck traffic or include stationary sources of emissions.

Community risk impacts are addressed by predicting increased lifetime cancer risk, the increase in annual $PM_{2.5}$ concentrations and computing the Hazard Index (HI) for non-cancer health risks. The methodology for computing community risks impacts is contained in *Attachment 1*.

Operational Community Health Risk Impacts

Community health risk assessments typically look at all substantial sources of TACs located within 1,000 feet of project sites. These sources include railways, freeways or highways, busy surface streets, and stationary sources identified by BAAQMD. A review of the project area indicates that traffic on State Route 82 (i.e. El Camino Real) is a busy roadway that is a source of TACs. Other nearby streets are assumed to have less than 10,000 vehicles per day. The Union Pacific Rail Road on which Caltrain runs is also a TAC source. A review of BAAQMD's stationary source Google Earth map tool identified one source with the potential to affect the project site. Figure 1 shows the sources affecting the project site. Details of the modeling and community risk calculations are included in *Attachment 3.*

Figure 1. Project Site and 1,000-Foot Radius for Identifying TAC Sources



Railroad: Caltrain

The project site is located adjacent to the Caltrain rail lines. Rail activity on these lines currently generates TAC and $PM_{2.5}$ emissions from locomotive exhaust. These rail lines are used for passenger (Caltrain, ACE, and Amtrak) and freight service by trains using diesel fueled locomotives. The Peninsula Corridor Electrification Project is a key component of the Caltrain Modernization Program that would electrify the Caltrain Corridor from San Francisco to San Jose. Under this program, diesel-locomotive hauled trains would be converted to Electric Multiple Unit (EMU) trains after 2020.

Currently all of Caltrain's trains use diesel locomotives. As part of the program to modernize operation of the Caltrain rail corridor between San Jose and San Francisco, Caltrain is planning to

switch from diesel locomotives to use of electric trains in the near future.[8] Nearly all of the trains in the future are planned to be EMU trains, which are self-propelled electric rail vehicles that can accelerate and decelerate at faster rates than diesel power trains, even with longer trains. As a result, Caltrain would be able to increase the number of trains during peak periods to accommodate service demand. This plan was formally adopted on January 8, 2015 and electrified service is anticipated to begin in 2020 or 2021.[9]

Based on the current Caltrain schedule, there are 92 trains passing the project site during the weekdays, 32 trains during the weekend, and 4 trains that only run on Saturday. On an annual average basis there would be a total of 75 daily trains using diesel locomotives. Electrification of Caltrain would eliminate DPM emissions from most of these trains and would increase the total number of weekday trains from 92 to 114. Amtrak's Capitol Corridor and Coast Starlight passenger trains also use these rail lines. Based on current Amtrak schedules, the Amtrak Capitol Corridor, which provides service between Sacramento/Auburn and San Jose, has 8 weekday trains and 7 weekend trains that used these rail lines. The Amtrak Coast Starlight operates between Seattle and Los Angles, with 2 daily trains. In addition to the Caltrain and Amtrak trains, there are about ten freight trains that also use this rail line on a daily basis.[10]

Caltrain plans are that in 2021 service between San Jose and San Francisco would use a mixed fleet of EMUs and diesel locomotives, with approximately 75% of the service being electric and 25% being diesel. In 2021, some peak service trains would be diesel on weekdays. All other service, including off-peak periods, would be EMU-based. Off-peak periods include early morning, midday, and after 7:00 p.m. After 2020, diesel locomotives would be replaced with EMUs over time as they reach the end of their service life. Caltrain's diesel-powered locomotives would continue to be used to provide service between the San Jose Diridon Station and Gilroy. It is expected that all of the San Jose to San Francisco fleet would be EMUs by 2026 to 2029.[11]

Starting in 2021 when Caltrain electrification occurs there would be 24 daily weekday trips and 4 daily weekend trips with 4 additional trips on Saturdays using trains with diesel locomotives[12]. On an annual average basis there would be a total of 19 daily trains using diesel locomotives. From 2026 through 2035 it was conservatively assumed that there would be 4 daily weekday diesel trains on the rail line and from 2036 to 2051 is was assumed there would be 2 daily weekday diesel trains on the rail line. All of Amtrak's Capitol Corridor and Coast Starlight trains were assumed to operate on the current schedules in the future and all locomotives would remain diesel fueled. All trains used for freight service were assumed to use diesel powered locomotives.

For this evaluation it was assumed that occupancy of the occupancy of the project's residential units would begin in 2022. In calculating cancer risks from DPM emissions from rail line diesel locomotives a 30-year exposure period is used. In this case the exposure period would be from 2022 to 2051. Rail line DPM emissions were calculated for three periods, 2022-2025, 2026-2035, and 2036-2051. Modeled concentrations from the rail lines for these periods were used to calculate

[8] Caltrain, 2014. *Peninsula Corridor Electrification Project. Final Environmental Impact Report*. December 2014.
[9] Caltrain, 2015. *Peninsula Corridor Electrification Fact Sheet*. May 2015.
[10] *Bay Area Regional Rail Plan, Technical Memorandum 4a, Conditions, Configuration & Traffic on Existing System*, Metropolitan Transportation Commission, November 15, 2006.
[11] Ibid
[12] Caltrain 2015. *Short Range Transit Plan:FY2015-2024*. October 1, 2015.

potential increased cancer risks for new project residents assuming almost continual exposure (350 days per year for 24 hours per day) over a 30-year period.

DPM and $PM_{2.5}$ emissions from trains on the rail line were calculated using EPA emission factors for locomotives[13] and CARB adjustment factors to account for fuels used in California.[14] Caltrain's current locomotive fleet consists of twenty 3,200 horsepower (hp) locomotives of model year or overhaul date of 1999 or later, three 3,200 hp locomotives of model year 1998, and six 3,600 hp locomotives of model year 2003.[15] The current fleet average locomotive engine size is about 3,285 hp. When electrification occurs, Caltrain will retain the six 3,600 hp locomotives and the three-model year 1998 3,200 hp locomotives.[16] In estimating diesel locomotive emissions for Caltrain an average locomotive horsepower of 3,467 hp was used. Amtrak passenger trains were assumed to use 3,200 hp diesel locomotives and would continue to do so in the future. Each passenger train was assumed to use one locomotive and would be traveling at an average speed of 40 mph in the vicinity of the project site. Emissions from the freight trains were calculated assuming they would use two locomotives with 2,300 hp engines (total of 4,600 hp) and would be traveling at about 40 mph.

Dispersion modeling of locomotive emissions was conducted using the EPA's AERMOD dispersion model and five-year data set (2006-2010) of hourly meteorological data from the San Jose Airport prepared for use with the AERMOD model by the BAAQMD. Locomotive emissions from train travel within about 1,000 feet of the project site were modeled as three-line sources comprised of a series of volume sources along each rail line. DPM concentrations were calculated at receptor locations placed within the proposed residential areas of the project on the second through fourth floor levels. Receptors were not modeled for the first-floor level because there are no planned residential units on the first floor. Impacts above the fourth-floor level would be lower than those on the fourth floor and were not included in the modeling. Receptors heights of 9.1 meters (30 feet) and 12.2 meters (40 feet), representative of breathing heights on the third and fourth floor levels of the proposed residential buildings, were used in the modeling. Figure 2 shows the railroad line segments used for the modeling and receptor locations at the project site where concentrations were calculated and the receptor where maximum health impacts would occur. The maximum modeled long-term DPM and $PM_{2.5}$ concentrations occurred at the third-floor level in the northeastern portion of the project site.

The maximum increased lifetime cancer risk and annual $PM_{2.5}$ concentrations for new residents at the project site are shown in Table 4 and were computed using modeled DPM and $PM_{2.5}$ concentrations and BAAQMD recommended methods and exposure parameters described in *Attachment 1*. The maximum increased cancer risk was computed from this concentration as 7.9 in one million and the annual average $PM_{2.5}$ concentration was 0.01 $\mu g/m^3$. Potential non-cancer health effects due to chronic exposure to DPM were computed as a HI of less than 0.01. Details of the emission calculations, dispersion modeling and cancer risk calculations are contained in *Attachment 4.*

[13] *Emission Factors for Locomotives*, USEPA 2009 (EPA-420-F-09-025)
[14] *Offroad Modeling, Change Technical Memo*, Changes to the Locomotive Inventory, CARB July 2006.
[15] Caltrain *Commute Fleets*. Available at: http://www.caltrain.com/about/statsandreports.html. Accessed March 4, 2016.
[16] Caltrain 2015. *Short Range Transit Plan:FY2015-2024*. October 1, 2015.

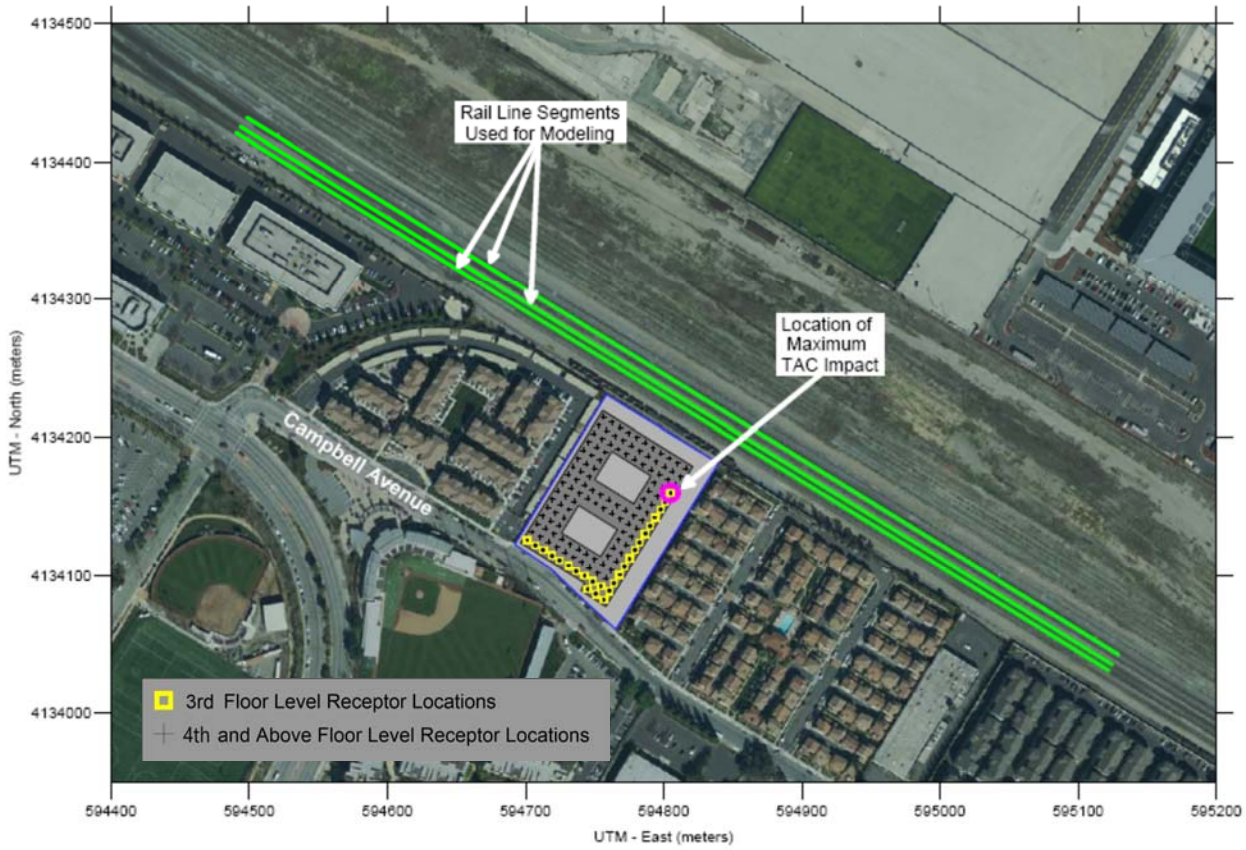
The maximum cancer risks, $PM_{2.5}$ concentration, and non-cancer health impacts (hazard index) are below their respective BAAQMD significance thresholds. The location of the receptor where the maximum TAC and $PM_{2.5}$ impacts from the rail line occurred is shown in Figure 2.

Table 4. Maximum Health Risk Impacts from Rail Line

Source	Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Chronic Hazard Index
Rail Line			
3rd Floor Maximum Impact	7.9	0.01	<0.01
4th Floor Maximum Impact	5.2	0.01	<0.01
BAAQMD Thresholds	*10.0*	*0.3*	*1.0*

Note: **Bold** denotes levels above single-source thresholds.

Figure 2. Project Site, On-site Residential Receptors, Rail Line Segments Evaluated, and Locations of Maximum TAC Impact



Highways – State Route 82 (i.e. El Camino Real)

BAAQMD provides a Google Earth *Highway Screening Analysis Tool* that can be used to identify screening level impacts from State highways. State Route 82 / El Camion Real (Link 319, 6ft

elevation) risk impacts were screened using the BAAQMD *Highway Screening Analysis Tool*. The lifetime cancer risk, annual $PM_{2.5}$ exposure, and non-cancer HI corresponding to the distance between the project and the site was used. The data were based on the project being 400 feet east of the highway. Cancer risk levels were adjusted for exposure duration, age, and new exposure guidance provided by OEHHA, as described in *Attachment 1*. The community risk impacts are discussed in Table 5.

Stationary Sources

Permitted stationary sources of air pollution near the project site were identified using BAAQMD's *Stationary Source Risk & Hazard Analysis Tool*. This mapping tool uses Google Earth and identified the location of one stationary source and its estimated risk and hazard impacts. A Stationary Source Information Form (SSIF) containing the identified sources was prepared and submitted to BAAQMD. They provided updated risk levels, emissions and adjustments to account for new OEHHA guidance.[17] The risk values were then adjusted with the appropriate distance multiplier values provided by BAAQMD or the emissions information was used in refined modeling.

One stationary source was identified (Plants #15397-24) as a generator. The screening risk levels for this stationary source was provided by BAAQMD and adjusted for distance based on BAAQMD's *Distance Adjustment Multiplier Tool for Diesel Internal Combustion Engines.* Concentrations and community risk impacts from this source upon the project is reported in Table 5.

Cumulative Community Health Risk at Project Site

Community risk impacts from combined sources upon the project site are reported in Table 5. As shown, the annual cancer risks, annual $PM_{2.5}$ concentrations, and HI are all below their respective single and cumulative source significance thresholds and would be considered a *less-than significant* impact.

Table 5. Community Risk Impact to New Project Residences

Source	Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
Caltrain Line at 130 feet	7.9	0.01	<0.01
State Route 82 / El Camino Real (Link 319, 6ft) at 400ft east	6.1	0.05	<0.01
Plant #15397-24 (generator) at 10 feet	0.5	<0.01	<0.01
BAAQMD Single-Source Threshold	***>10.0***	***>0.3***	***>0.1***
Significant?	***No***	***No***	***No***
Cumulative Total	14.5	<0.07	<0.3
BAAQMD Cumulative Source Threshold	***>100***	***>0.8***	***>10.0***
Significant?	***No***	***No***	***No***

[17] Correspondence with Areana Flores, BAAQMD, April 17, 2019.

Construction Community Health Risk Impacts

Project Construction Activity

Construction equipment and associated heavy-duty truck traffic generates diesel exhaust, which is a known TAC. These exhaust air pollutant emissions would not be considered to contribute substantially to existing or projected air quality violations. Construction exhaust emissions may still pose health risks for sensitive receptors such as surrounding residents. The primary community risk impact issues associated with construction emissions are cancer risk and exposure to $PM_{2.5}$. Diesel exhaust poses both a potential health and nuisance impact to nearby receptors. A health risk assessment of the project construction activities was conducted that evaluated potential health effects to nearby sensitive receptors from construction emissions of DPM and $PM_{2.5}$.[18] This assessment included dispersion modeling to predict the offsite and onsite concentrations resulting from project construction, so that lifetime cancer risks and non-cancer health effects could be evaluated.

Construction Emissions

The CalEEMod model provided total annual PM_{10} exhaust emissions (assumed to be DPM) for the off-road construction equipment and for exhaust emissions from on-road vehicles, with total emissions from all construction stages as 0.1493 tons (299 pounds). The on-road emissions are a result of haul truck travel during demolition and grading activities, worker travel, and vendor deliveries during construction. A trip length of one mile was used to represent vehicle travel while at or near the construction site. It was assumed that these emissions from on-road vehicles traveling at or near the site would occur at the construction site. Fugitive $PM_{2.5}$ dust emissions were calculated by CalEEMod as 0.0953 tons (191 pounds) for the overall construction period.

Dispersion Modeling

The U.S. EPA AERMOD dispersion model was used to predict concentrations of DPM and $PM_{2.5}$ at sensitive receptors (residences) in the vicinity of the project construction area. The AERMOD dispersion model is a BAAQMD-recommended model for use in modeling analysis of these types of emission activities for CEQA projects.[19] For each of the construction sites modeled, the modeling utilized two area sources to represent the on-site construction emissions, one for exhaust emissions and one for fugitive dust emissions. To represent the construction equipment exhaust emissions, an emission release height of 6 meters (19.7 feet) was used for the area sources. The elevated source height reflects the height of the equipment exhaust pipes plus an additional distance for the height of the exhaust plume above the exhaust pipes to account for plume rise of the exhaust gases. For modeling fugitive $PM_{2.5}$ emissions, a near-ground level release height of 2 meters (6.6 feet) was used for the area sources. Emissions from the construction equipment and on-road vehicle travel were distributed throughout the modeled area sources. Construction emissions were modeled as occurring daily between 7 a.m. to 5 p.m., when the majority of construction activity would occur.

[18] DPM is identified by California as a toxic air contaminant due to the potential to cause cancer.
[19] Bay Area Air Quality Management District (BAAQMD), 2012, *Recommended Methods for Screening and Modeling Local Risks and Hazards, Version 3.0.* May.

The modeling used a 5-year meteorological data set (2006-2010) from the San José Airport prepared for use with the AERMOD model by the BAAQMD. Annual DPM and $PM_{2.5}$ concentrations from construction activities at the project site during the 2020-2021 period were calculated using the model. DPM and $PM_{2.5}$ concentrations were calculated at nearby sensitive receptor locations. Receptor heights of 1.5 meters (4.9 feet) and 4.5 meters (14.7 feet) were used to represent the breathing height of nearby residences in nearby apartments and single-family homes.

The maximum-modeled annual DPM and $PM_{2.5}$ concentrations, which includes both the DPM and fugitive $PM_{2.5}$ concentrations, were identified at nearby sensitive receptors (as shown in Figure 3) to find the maximally exposed individuals (MEIs). Using the maximum annual modeled DPM concentrations, the maximum increased cancer risks were calculated using BAAQMD recommended methods and exposure parameters described in *Attachment 1*. Non-cancer health hazards and maximum $PM_{2.5}$ concentrations were also calculated and identified.

Results of this assessment indicated that the construction MEI was located at a single-family home (1.5 meters) located east of the project site. The maximum excess residential cancer risks and annual maximum $PM_{2.5}$ concentration at this location would be greater than the BAAQMD significance thresholds of 10 in one million for cancer risk and 0.3 $\mu g/m^3$ for $PM_{2.5}$ concentration. Table 6 summarizes the maximum cancer risks, $PM_{2.5}$ concentrations, and health hazard indexes for project related construction activities affecting the residential MEI. *Attachment 5* to this report includes the emission calculations used for the construction area source modeling and the cancer risk calculations.

Figure 3. Project Construction Site and Locations of Off-Site Sensitive Receptors and Maximum TAC Impacts

Cumulative Community Health Risk at Construction MEI

Cumulative TAC impacts are assessed by predicting the combined community risk impacts to the project and nearby sources. Table 6 reports both the project and cumulative community risk impacts. The project would have a *significant* impact with respect to community risk caused by project construction activities, since the maximum cancer risk is above the single-source threshold of 10.0 per million for cancer risk and the annual maximum PM2.5 concentration is above the single-source threshold of 0.3 µg/m^3) for $PM_{2.5}$ concentrations. As shown in Table 6, the combined cancer risk and hazard risk values, which includes unmitigated and mitigated, would not exceed the cumulative thresholds. The combined $PM_{2.5}$ concentration would exceed the cumulative threshold unmitigated but would not exceed when mitigated. *Mitigation Measures AQ-2 would reduce these impacts to less-than-significant levels.*

Table 6. Impacts from Combined Sources at Construction MEI

Source		Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
Project Construction	Unmitigated	**79.5 (infant)**	**0.89**	0.03
	Mitigated	8.0 (infant)	0.18	0.01
BAAQMD Single-Source Threshold		***>10.0***	***>0.3***	***>0.1***
Significant?	Unmitigated	***Yes***	***Yes***	*No*
	Mitigated	*No*	*No*	*No*
Caltrain Line at 350 feet		6.5	0.01	<0.01
State Route 82 / El Camino Real (Link 319, 6ft) at 400ft east		3.4	0.02	<0.01
Plant #15397-24 (generator) at 10 feet		0.1	<0.01	<0.01
Cumulative Total	Unmitigated	89.5	<**0.93**	<0.06
	Mitigated	18.0	<0.22	<0.04
BAAQMD Cumulative Source Threshold		***>100***	***>0.8***	***>10.0***
Significant?	Unmitigated	*No*	***Yes***	*No*
	Mitigated	*No*	*No*	*No*

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

The project shall develop a plan demonstrating that the off-road equipment used on-site to construct the project would achieve a fleet-wide average 87 percent reduction in particulate matter exhaust emissions or greater. One feasible plan to achieve this reduction would include the following:

- All diesel-powered off-road equipment, larger than 25 horsepower, operating on the site for more than two days continuously shall, at a minimum, meet U.S. EPA particulate matter emissions standards for Tier 3 engines with CARB-certified Level 3 Diesel Particulate Filters[20] or equivalent. The use of equipment meeting U.S. EPA Tier 4 standards for particulate matter would also meet this requirement. Alternatively, the use of equipment that includes electric or alternatively-fueled equipment (i.e., non-diesel) would meet this requirement.

- Provide line-power to the site during the early phases of construction to avoid using portable diesel-powered equipment.

- Diesel generator use shall be restricted to 100 hours or less.

- Implement Mitigation Measure AQ-1 that implements measures to control dust and equipment exhaust during construction.

Effectiveness of Mitigation Measure

With Mitigation Measures AQ-1 and AQ-2, the computed maximum increased lifetime residential cancer risk from construction, assuming infant exposure, would be 8.0 in one million or less, the

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

maximum annual $PM_{2.5}$ concentration would be 0.18 $\mu g/m^3$, and the HI would be 0.01. As a result, impacts would be reduced to *less-than-significant* with respect to community risk caused by construction activities.

Greenhouse Gas Emissions

Setting

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

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

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

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

Recent Regulatory Actions

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

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

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

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

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

SB 350 Renewable Portfolio Standards

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

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

In April 2015, Governor Brown signed Executive Order which extended the goals of AB 32,

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

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

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

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

BAAQMD Significance Thresholds

The BAAQMD's CEQA Air Quality Guidelines do not use quantified thresholds for projects that are in a jurisdiction with a qualified GHG reductions plan (i.e., a Climate Action Plan). The plan has to address emissions associated with the period that the project would operate (e.g., beyond year 2020). For quantified emissions, the guidelines recommended a GHG threshold of 1,100 metric tons or 4.6 metric tons (MT) per capita. These thresholds were developed based on meeting the 2020 GHG targets set in the scoping plan that addressed AB 32. Development of the project would occur beyond 2020, so a threshold that addresses a future target is appropriate. Although BAAQMD has not published a quantified threshold for 2030 yet, this assessment uses a "Substantial Progress" efficiency metric of 2.6 MT CO_2e/year/service population. 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 population and employment levels.[21]

Climate Smart San José

Climate Smart San José is a plan to reduce air pollution, save water, and create a stronger and healthier community. The City approved goals and milestones in February 2018 to ensure the City can substantially reduce GHG emissions through reaching the following goals and milestones:

- All new residential buildings will be Zero Net Carbon Emissions (ZNE) by 2020 and all new commercial buildings will be ZNE by 2030 (Note that ZNE buildings would be all electric with a carbon-free electricity source).
- San Jose Clean Energy (SJCE) will provide 100-percent carbon-free base power by 2021.
- One gigawatt of solar power will be installed in San Jose by 2040.
- 61 percent of passenger vehicles will be powered by electricity by 2030.

The California Energy Commission (CEC) updates the California Building Energy Efficiency Standards every three years, in alignment with the California Code of regulations. Title 24 Parts 6 and 11 of the California Building Energy Efficiency Standards and the California Green Building Standards Code (CALGreen) address the need for regulations to improve energy efficiency and combat climate change. The 2019 CAL Green standards include some substantial changes intended to increase the energy efficiency of buildings. For example, the code encourages the installation of solar and heat pump water heaters in low-rise residential buildings. The 2019 California Code went before City Council in October 2019 for approval, with an effective date of January 1, 2020. As part of this action, the City adopted a "reach code" that requires development projects to exceed the minimum Building Energy Efficiency requirements.[22] The City's reach code applies only to new residential and non-residential construction in San José. It incentivizes all-electric construction, requires increased energy efficiency and electrification-readiness for those choosing to maintain the presence of natural gas. The code requires that non-residential construction include solar readiness. It also requires additional EV charging readiness and/or electric vehicle service equipment (EVSE) installation for all development types.

Impact 3: 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.

[21] 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.
[22] City of San Jose Transportation and Environmental Committee, *Building Reach Code for New Construction Memorandum,* August 2019.

CalEEMod Modeling

CalEEMod was used to predict GHG emissions from operation of the site assuming full build-out of the project. The project land use types and size and other project-specific information were input to the model, as described above within the operational period emissions. The project will use SJCE as the electricity provider. Note that it is assumed the project would use natural gas, although the City's new reach code would discourage this source of energy. Assuming the project will be operational by 2022 at the earliest, the 100% carbon-free SJCE-provided electricity assumption was applied to the energy mitigation section of the project modeling. CalEEMod output is included in *Attachment 2*.

Service Population Emissions

The project service population efficiency rate is based on the number of future residents. For this project, the number of future residents was estimated by multiplying the total number of units by the persons per household rate for San Jose found in the California Department of Finance Population and Housing Estimate report.[23] Using the 3.20 persons per household 2019 estimate for San Jose, the number of future residents and the project's service population is estimated to be 928.

Construction Emissions

GHG emissions associated with construction were computed to be 869 MT of CO_2e for the total construction period. These are the emissions from on-site operation of construction equipment, vendor and hauling truck trips, and worker trips. Neither the City nor BAAQMD have an adopted threshold of significance for construction-related GHG emissions, though BAAQMD recommends quantifying emissions and disclosing that GHG emissions would occur during construction. BAAQMD also encourages the incorporation of best management practices to reduce GHG emissions during construction where feasible and applicable.

Operational Emissions

The CalEEMod model, along with the project vehicle trip generation rates, was used to estimate daily emissions associated with operation of the fully-developed site under the proposed project. As shown in Table 7, annual net emissions resulting from operation of the proposed project are predicted to be 1,578 MT of CO_2e for the year 2022 and 1,234 MT of CO_{2e} for the year 2030. The 2030 emissions does exceed the 2030 "Substantial Progress" threshold of 660 MT of CO_{2e}/yr. The Service Population Emissions for the year 2022 would be 2.2 and 1.8 for the year 2030. The 2030 Service Population Emissions does not exceed the "Substantial Progress" efficiency metric of 2.6 MT CO_2e/year/service population.

To be considered significant, the project must exceed both the GHG significance threshold in metric tons per year and the service population significance threshold. This project does not exceed

[23] State of California, Department of Finance, *E-5 Population and Housing Estimates for Cities, Counties and the State — January 1, 2011-2019*. Sacramento, California, June 2019.

the service population significance threshold. Therefore, the project would have a *less-than-significant* impact regarding GHG emissions.

Table 7. Annual Project GHG Emissions (CO_2e) in Metric Tons

Source Category	Existing in 2022	Proposed Project in 2022	Proposed Project in 2030
Area	<1	15	15
Energy Consumption	178	182	182
Mobile	247	1,725	1,381
Solid Waste Generation	27	92	92
Water Usage	30	46	46
Total	482	2,060	1,716
Net New Emissions		**1,578**	**1,234**
Significance Threshold			***660 MT CO_2e/yr***
Service Population Emissions (MT CO2e/year/service population)		2.2	1.8
Significance Threshold			***2.6 in 2030***
Significant (Exceeds both thresholds)?			***No***

Supporting Documentation

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

Attachment 2 includes the CalEEMod output for project construction and operational criteria air pollutant and GHG emissions. The operational output for existing uses is also included in this attachment. Also included are any modeling assumptions.

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

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

Attachment 5 is the construction health risk assessment. AERMOD dispersion modeling files for this assessment, which are quite voluminous, are available upon request and would be provided in digital format.

Attachment 1: Health Risk Calculation Methodology

A health risk assessment (HRA) for exposure to Toxic Air Contaminates (TACs) requires the application of a risk characterization model to the results from the air dispersion model to estimate potential health risk at each sensitive receptor location. The State of California Office of Environmental Health Hazard Assessment (OEHHA) and California Air Resources Board (CARB) develop recommended methods for conducting health risk assessments. The most recent OEHHA risk assessment guidelines were published in February of 2015.[24] These guidelines incorporate substantial changes designed to provide for enhanced protection of children, as required by State law, compared to previous published risk assessment guidelines. CARB has provided additional guidance on implementing OEHHA's recommended methods.[25] This HRA used the recent 2015 OEHHA risk assessment guidelines and CARB guidance. The BAAQMD has adopted recommended procedures for applying the newest OEHHA guidelines as part of Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants.[26] Exposure parameters from the OEHHA guidelines and the recent BAAQMD HRA Guidelines were used in this evaluation.

Cancer Risk

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

The current OEHHA guidance recommends that cancer risk be calculated by age groups to account for different breathing rates and sensitivity to TACs. Specifically, they recommend evaluating risks for the third trimester of pregnancy to age zero, ages zero to less than two (infant exposure), ages two to less than 16 (child exposure), and ages 16 to 70 (adult exposure). Age sensitivity factors (ASFs) associated with the different types of exposure are an ASF of 10 for the third trimester and infant exposures, an ASF of 3 for a child exposure, and an ASF of 1 for an adult exposure. Also associated with each exposure type are different breathing rates, expressed as liters per kilogram of body weight per day (L/kg-day). As recommended by the BAAQMD, 95th percentile breathing rates are used for the third trimester and infant exposures, and 80th percentile breathing rates for child and adult exposures. Additionally, CARB and the BAAQMD recommend the use of a residential exposure duration of 30 years for sources with long-term emissions (e.g., roadways).

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

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

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

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

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

Cancer Risk (per million) = $CPF \times Inhalation\ Dose \times ASF \times ED/AT \times FAH \times 10^6$

Where:

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

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

Where:

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

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

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

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

Non-Cancer Hazards

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

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

Annual $PM_{2.5}$ Concentrations

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

Attachment 2: CalEEMod Modeling Output

Project Name: SCU Faculty-Staff Housing and Bronco Tech Center

Project Size
290 Dwelling Units — 2.99 total project acres disturbed
380,000 s.f. residential — 0 s.f. retail
26,000 s.f. office/commercial — s.f. other, specify:
0 s.f. other, specify:
127,260 s.f. parking garage — 294 spaces
0 s.f. parking lot — spaces

Construction Hours 7:00 am to 5:00 pm

Complete ALL Portions in Yellow

Qty	Description	HP	Load Factor	Hours/day	Total Work Days	Avg. Hours per day	Comments
	Demolition	**Start Date:**	**6/1/2020**	**Total phase:**	**20**		**Overall Import/Export Volumes**
		End Date:	**6/26/2020**				
1	Concrete/Industrial Saws	81	0.73	8	20	8	**Demolition Volume**
3	Excavators	162	0.38	8	20	8	Square footage of buildings to be demolished
2	Rubber-Tired Dozers	255	0.4	8	20	8	(*or* total tons to be hauled)
	Tractors/Loaders/Backhoes	97	0.37			0	44,100 square feet *or*
							? Hauling volume (tons)
	Site Preperation	**Start Date:**	**6/27/2020**	**Total phase:**	**10**		Any pavement demolished and hauled? ? tons
		End Date:	**7/10/2020**				**Soil Hauling Volume**
	Graders	174	0.41			0	
3	Rubber Tired Dozers	255	0.4	8	10	8	Export volume = 2,269 cubic yards
4	Tractors/Loaders/Backhoes	97	0.37	8	10	8	Import volume = 2,488 cubic yards
	Grading / Excavation	**Start Date:**	**7/11/2020**	**Total phase:**	**20**		
		End Date:	**8/7/2020**				**Soil Hauling Volume**
	Scrapers	**361**	**0.48**			0	
1	Excavators	162	0.38	8	20	8	Export volume = 17,397 cubic feet
1	Graders	174	0.41	8	20	8	Import volume = 0 cubic feet
1	Rubber Tired Dozers	255	0.4	8	20	8	
3	Tractors/Loaders/Backhoes	97	0.37	8	20	8	
	Other Equipment?						
	Trenching	**Start Date:**	**7/11/2020**	**Total phase:**	**10**		
		End Date:	**7/24/2020**				
1	Tractor/Loader/Backhoe	97	0.37	8	10	8	
1	Excavators	162	0.38	8	10	8	
	Other Equipment?						
	Building - Exterior	**Start Date:**	**8/8/2020**	**Total phase:**	**230**		**Cement Trucks? ? Total Round-Trips**
		End Date:	**6/25/2021**				
1	Cranes	226	0.29	7	230	7	Electric? (Y/N) ___ Otherwise assumed diesel
3	Forklifts	89	0.2	8	230	8	Liquid Propane (LPG)? (Y/N) _N__ Otherwise Assumed diese
1	Generator Sets	84	0.74	8	230	8	Or temporary line power? (Y/N) _Y__
3	Tractors/Loaders/Backhoes	97	0.37	7	230	7	otherwise, assume diesel generator
1	Welders	46	0.45	8	230	8	
	Other Equipment?					0	
	Building - Interior/Architectural Coating	**Start Date:**	**7/24/2021**	**Total phase:**	**20**		
		End Date:	**8/20/2021**				
1	Air Compressors	78	0.48	6	20	6	
	Aerial Lift	62	0.31			0	
	Other Equipment?						
	Paving	**Start Date:**	**6/26/2021**	**Total phase:**	**20**		
		End Date:	**7/23/2021**				
	Cement and Mortar Mixers	9	0.56			0	
2	Pavers	125	0.42	8	20	8	**Asphalt? ___ cubic yards or ____ round trips?**
2	Paving Equipment	130	0.36	8	20	8	
2	Rollers	80	0.38	8	20	8	
	Tractors/Loaders/Backhoes	97	0.37			0	
	Other Equipment?						

Equipment listed in this sheet is to provide an example of inputs
It is assumed that water trucks would be used during grading

Add or subtract phases and equipment, as appropriate
Modify horepower or load factor, as appropriate

Typical Equipment Type & Load Factors

OFFROAD Equipment Type	HP	Load Factor
Aerial Lifts	62	0.31
Air Compressors	78	0.48
Bore/Drill Rigs	205	0.5
Cement and Mortar Mixers	9	0.56
Concrete/Industrial Saws	81	0.73
Cranes	226	0.29
Crawler Tractors	208	0.43
Crushing/Proc. Equipment	85	0.78
Dumpers/Tenders	16	0.38
Excavators	162	0.38
Forklifts	89	0.2
Generator Sets	84	0.74
Graders	174	0.41
Off-Highway Tractors	122	0.44
Off-Highway Trucks	400	0.38
Other Construction Equipment	171	0.42
Other General Industrial Equipment	150	0.34
Other Material Handling Equipment	167	0.4
Pavers	125	0.42
Paving Equipment	130	0.36
Plate Compactors	8	0.43
Pressure Washers	13	0.2
Pumps	84	0.74
Rollers	80	0.38
Rough Terrain Forklifts	100	0.4
Rubber Tired Dozers	255	0.4
Rubber Tired Loaders	199	0.36
Scrapers	361	0.48
Signal Boards	6	0.82
Skid Steer Loaders	64	0.37
Surfacing Equipment	253	0.3
Sweepers/Scrubbers	64	0.46
Tractors/Loaders/Backhoes	97	0.37
Trenchers	80	0.5
Welders	46	0.45

Table 5
Project Trip Generation Estimates

Proposed Land Use	ITE Land Use	% of Vehicle Mode Share	VMT [3] Existing	VMT [3] Project	Reduction %	Size	Daily Rate	Daily Trip	AM Peak Hour Rate	AM Peak Hour Split In	AM Peak Hour Split Out	AM Peak Hour Trip In	AM Peak Hour Trip Out	AM Peak Hour Trip Total	PM Peak Hour Rate	PM Peak Hour Split In	PM Peak Hour Split Out	PM Peak Hour Trip In	PM Peak Hour Trip Out	PM Peak Hour Trip Total
Faculty and Staff Housing	Multifamily Housing (Mid-Rise) (LU 221)					290 Dwelling Units	5.44	1,578	0.36	26%	74%	27	77	104	0.44	61%	39%	78	50	128
3% housing and employment mixed-use reduction [1]					3%			-42				0	-1	-1				-1	-1	-2
Location based reduction (Urban Low-Transit) [2]		87%			13%			-200				-4	-10	-14				-10	-6	-16
VMT reduction			7.64	6.86	*10%*			-134				-2	-7	-9				-7	-4	-11
Incubator Space	University/College (LU 550)					54,000 Square Feet	26.04	1,406	1.09	77%	23%	45	14	59	1.17	32%	68%	20	43	63
3% housing and employment mixed-use reduction [1]					3%			-42				-1	0	-1				-1	-1	-2
Location based reduction (Urban Low-Transit) [2]		91%			9%			-123				-4	-1	-5				-2	-4	-6
VMT reduction			13.69	11.94	*13%*			-161				-5	-2	-7				-2	-5	-7
Total Proposed Project Trips								**2,282**				**56**	**70**	**126**				**75**	**72**	**147**

Source: ITE Trip Generation Manual, 10th Edition 2017

[1] As prescribed by the VTA Transportation Impact Analysis Guidelines (October 2014), the maximum trip reduction for a mixed-use development project with housing and employment components is equal to 3% off the smaller trip generator.

[2] The project site is located within an urban low-transit area based on the City of San Jose VMT Evaluation Tool (March 14, 2018) - sketch tool. The location-based vehicle mode shares are obtained from Table 6 of the City of San Jose Transportation Analysis Handbook (April 2018). The trip reductions are based on the percent of mode share for other modes of travel beside vehicle.

[3] Existing and project VMTs were estimated using the sketch tool. It is assumed that every percent reduction in VMT is equivalent to one percent reduction in peak-hour vehicle trips.

SCU Faculty Housing & Tech Center - Santa Clara County, Annual

SCU Faculty Housing & Tech Center

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	54.00	1000sqft	0.00	54,000.00	0
Enclosed Parking with Elevator	389.00	Space	0.00	155,600.00	0
Apartments Mid Rise	290.00	Dwelling Unit	2.99	380,000.00	829

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E 2020 Rates = 290

Land Use - Applicant provided land uses

Construction Phase - Applicant approved Default construction schedule plus trenching

Off-road Equipment -

Off-road Equipment - Applicant approved construction Equip

Off-road Equipment - Applicant approved construction Equip

Off-road Equipment - Applicant approved construction Equip

Off-road Equipment - Applicant approved construction Equip

Off-road Equipment - Applicant approved construction Equip

Off-road Equipment - Applicant approved construction Equip, Added Trenching

Trips and VMT - Default vehicle trips

Demolition - Existing building demo = 44,100sf

Grading - Site Prep = 2,488cy import, 2,269cy export, Grading = 17,397cy export

Vehicle Trips - Apts w/ reductions = 4.14, 3.98, 3.65, Office w/ reductions = 20.00, 4.46, 1.90

Woodstoves - No wood, all gas

Energy Use -

Water And Wastewater - WTP treatment 100% aerobic

Energy Mitigation - SJCE 100% carbon-free base power by 2021

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	20.00
tblConstructionPhase	NumDays	220.00	230.00
tblConstructionPhase	NumDays	6.00	20.00
tblConstructionPhase	NumDays	10.00	20.00
tblConstructionPhase	NumDays	3.00	10.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	43.50	92.80
tblFireplaces	NumberWood	49.30	0.00
tblGrading	MaterialExported	0.00	17,397.00
tblGrading	MaterialExported	0.00	2,269.00
tblGrading	MaterialImported	0.00	2,488.00
tblLandUse	LandUseSquareFeet	290,000.00	380,000.00
tblLandUse	LotAcreage	1.24	0.00
tblLandUse	LotAcreage	3.50	0.00
tblLandUse	LotAcreage	7.63	2.99
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	6.00	7.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblTripsAndVMT	VendorTripNumber	65.00	56.00
tblTripsAndVMT	WorkerTripNumber	291.00	271.00
tblVehicleTrips	ST_TR	6.39	3.98
tblVehicleTrips	ST_TR	2.46	4.46
tblVehicleTrips	SU_TR	5.86	3.65
tblVehicleTrips	SU_TR	1.05	1.90
tblVehicleTrips	WD_TR	6.65	4.14
tblVehicleTrips	WD_TR	11.03	20.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00

tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	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	0.2624	2.6255	1.9291	5.3700e-003	0.3382	0.1034	0.4416	0.1299	0.0966	0.2265	0.0000	488.9443	488.9443	0.0651	0.0000	490.5714
2021	3.1900	1.6433	1.7134	4.2000e-003	0.1647	0.0698	0.2345	0.0443	0.0655	0.1099	0.0000	376.9749	376.9749	0.0485	0.0000	378.1875
Maximum	**3.1900**	**2.6255**	**1.9291**	**5.3700e-003**	**0.3382**	**0.1034**	**0.4416**	**0.1299**	**0.0966**	**0.2265**	**0.0000**	**488.9443**	**488.9443**	**0.0651**	**0.0000**	**490.5714**

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	0.2624	2.6255	1.9291	5.3700e-003	0.3382	0.1034	0.4416	0.1299	0.0966	0.2265	0.0000	488.9441	488.9441	0.0651	0.0000	490.5712
2021	3.1900	1.6433	1.7134	4.2000e-003	0.1647	0.0698	0.2345	0.0443	0.0655	0.1099	0.0000	376.9747	376.9747	0.0485	0.0000	378.1873
Maximum	**3.1900**	**2.6255**	**1.9291**	**5.3700e-003**	**0.3382**	**0.1034**	**0.4416**	**0.1299**	**0.0966**	**0.2265**	**0.0000**	**488.9441**	**488.9441**	**0.0651**	**0.0000**	**490.5712**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**6-1-2020**	**8-31-2020**	1.5708	1.5708
2	**9-1-2020**	**11-30-2020**	0.9595	0.9595
3	**12-1-2020**	**2-28-2021**	0.8932	0.8932
4	**3-1-2021**	**5-31-2021**	0.8764	0.8764
5	**6-1-2021**	**8-31-2021**	3.3896	3.3896
		Highest	3.3896	3.3896

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	2.0706	0.0349	2.1639	1.8000e-004		0.0127	0.0127		0.0127	0.0127	0.0000	15.1104	15.1104	3.6400e-003	2.1000e-004	15.2646
Energy	0.0183	0.1588	0.0855	1.0000e-003		0.0126	0.0126		0.0126	0.0126	0.0000	584.9500	584.9500	0.0439	0.0117	589.5264
Mobile	0.4647	1.9749	5.4301	0.0188	1.7371	0.0160	1.7531	0.4650	0.0149	0.4799	0.0000	1,723.1914	1,723.1914	0.0581	0.0000	1,724.6430
Waste						0.0000	0.0000		0.0000	0.0000	37.2732	0.0000	37.2732	2.2028	0.0000	92.3428
Water						0.0000	0.0000		0.0000	0.0000	10.0806	28.4725	38.5531	0.0375	0.0225	46.2000

Total	**2.5536**	**2.1686**	**7.6796**	**0.0200**	**1.7371**	**0.0413**	**1.7785**	**0.4650**	**0.0403**	**0.5053**	**47.3538**	**2,351.7242**	**2,399.0780**	**2.3459**	**0.0344**	**2,467.9767**

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	2.0706	0.0349	2.1639	1.8000e-004		0.0127	0.0127		0.0127	0.0127	0.0000	15.1104	15.1104	3.6400e-003	2.1000e-004	15.2646
Energy	0.0183	0.1588	0.0855	1.0000e-003		0.0126	0.0126		0.0126	0.0126	0.0000	180.8724	180.8724	3.4700e-003	3.3200e-003	181.9472
Mobile	0.4647	1.9749	5.4301	0.0188	1.7371	0.0160	1.7531	0.4650	0.0149	0.4799	0.0000	1,723.1914	1,723.1914	0.0581	0.0000	1,724.6430
Waste						0.0000	0.0000		0.0000	0.0000	37.2732	0.0000	37.2732	2.2028	0.0000	92.3428
Water						0.0000	0.0000		0.0000	0.0000	10.0806	28.4725	38.5531	0.0375	0.0225	46.2000
Total	**2.5536**	**2.1686**	**7.6796**	**0.0200**	**1.7371**	**0.0413**	**1.7785**	**0.4650**	**0.0403**	**0.5053**	**47.3538**	**1,947.6466**	**1,995.0004**	**2.3055**	**0.0260**	**2,060.3976**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**17.18**	**16.84**	**1.72**	**24.30**	**16.51**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2020	6/26/2020	5	20	
2	Site Preparation	Site Preparation	6/27/2020	7/10/2020	5	10	
3	Grading	Grading	7/11/2020	8/7/2020	5	20	
4	Trenching	Trenching	7/11/2020	7/24/2020	5	10	

5	Building Construction	Building Construction	8/8/2020	6/25/2021	5	230	
6	Paving	Paving	6/26/2021	7/23/2021	5	20	
7	Architectural Coating	Architectural Coating	7/24/2021	8/20/2021	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 769,500; Residential Outdoor: 256,500; Non-Residential Indoor: 81,000; Non-Residential Outdoor: 27,000; Striped

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Site Preparation	Graders	0	0.00	187	0.41
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Scrapers	0	0.00	367	0.48
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Trenching	Excavators	1	8.00	158	0.38
Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

Paving	Cement and Mortar Mixers	0	0.00	9	0.56
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	0.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	201.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	595.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	2,175.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	2	5.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	271.00	56.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	58.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 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					0.0217	0.0000	0.0217	3.2900e-003	0.0000	3.2900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0331	0.3320	0.2175	3.9000e-004		0.0166	0.0166		0.0154	0.0154	0.0000	33.9986	33.9986	9.6000e-003	0.0000	34.2386

Total	**0.0331**	**0.3320**	**0.2175**	**3.9000e-004**	**0.0217**	**0.0166**	**0.0383**	**3.2900e-003**	**0.0154**	**0.0187**	**0.0000**	**33.9986**	**33.9986**	**9.6000e-003**	**0.0000**	**34.2386**

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	8.4000e-004	0.0292	5.9700e-003	8.0000e-005	1.7000e-003	9.0000e-005	1.8000e-003	4.7000e-004	9.0000e-005	5.6000e-004	0.0000	7.6652	7.6652	3.5000e-004	0.0000	7.6740
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-004	3.6000e-004	3.7500e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	1.0202	1.0202	3.0000e-005	0.0000	1.0209
Total	**1.3400e-003**	**0.0295**	**9.7200e-003**	**9.0000e-005**	**2.8900e-003**	**1.0000e-004**	**3.0000e-003**	**7.9000e-004**	**1.0000e-004**	**8.8000e-004**	**0.0000**	**8.6854**	**8.6854**	**3.8000e-004**	**0.0000**	**8.6948**

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					0.0217	0.0000	0.0217	3.2900e-003	0.0000	3.2900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0331	0.3320	0.2175	3.9000e-004		0.0166	0.0166		0.0154	0.0154	0.0000	33.9986	33.9986	9.6000e-003	0.0000	34.2385
Total	**0.0331**	**0.3320**	**0.2175**	**3.9000e-004**	**0.0217**	**0.0166**	**0.0383**	**3.2900e-003**	**0.0154**	**0.0187**	**0.0000**	**33.9986**	**33.9986**	**9.6000e-003**	**0.0000**	**34.2385**

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	8.4000e-004	0.0292	5.9700e-003	8.0000e-005	1.7000e-003	9.0000e-005	1.8000e-003	4.7000e-004	9.0000e-005	5.6000e-004	0.0000	7.6652	7.6652	3.5000e-004	0.0000	7.6740
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-004	3.6000e-004	3.7500e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	1.0202	1.0202	3.0000e-005	0.0000	1.0209
Total	**1.3400e-003**	**0.0295**	**9.7200e-003**	**9.0000e-005**	**2.8900e-003**	**1.0000e-004**	**3.0000e-003**	**7.9000e-004**	**1.0000e-004**	**8.8000e-004**	**0.0000**	**8.6854**	**8.6854**	**3.8000e-004**	**0.0000**	**8.6948**

3.3 Site Preparation - 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					0.0906	0.0000	0.0906	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0204	0.2121	0.1076	1.9000e-004		0.0110	0.0110		0.0101	0.0101	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505
Total	**0.0204**	**0.2121**	**0.1076**	**1.9000e-004**	**0.0906**	**0.0110**	**0.1016**	**0.0497**	**0.0101**	**0.0598**	**0.0000**	**16.7153**	**16.7153**	**5.4100e-003**	**0.0000**	**16.8505**

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	2.4700e-003	0.0863	0.0177	2.3000e-004	5.0400e-003	2.8000e-004	5.3200e-003	1.3900e-003	2.7000e-004	1.6500e-003	0.0000	22.6906	22.6906	1.0400e-003	0.0000	22.7165
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	3.0000e-004	2.1000e-004	2.2500e-003	1.0000e-005	7.1000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.6121	0.6121	2.0000e-005	0.0000	0.6125
Total	**2.7700e-003**	**0.0865**	**0.0199**	**2.4000e-004**	**5.7500e-003**	**2.8000e-004**	**6.0400e-003**	**1.5800e-003**	**2.7000e-004**	**1.8400e-003**	**0.0000**	**23.3027**	**23.3027**	**1.0600e-003**	**0.0000**	**23.3290**

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					0.0906	0.0000	0.0906	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0204	0.2121	0.1076	1.9000e-004		0.0110	0.0110		0.0101	0.0101	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505
Total	**0.0204**	**0.2121**	**0.1076**	**1.9000e-004**	**0.0906**	**0.0110**	**0.1016**	**0.0497**	**0.0101**	**0.0598**	**0.0000**	**16.7153**	**16.7153**	**5.4100e-003**	**0.0000**	**16.8505**

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	2.4700e-003	0.0863	0.0177	2.3000e-004	5.0400e-003	2.8000e-004	5.3200e-003	1.3900e-003	2.7000e-004	1.6500e-003	0.0000	22.6906	22.6906	1.0400e-003	0.0000	22.7165
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	3.0000e-004	2.1000e-004	2.2500e-003	1.0000e-005	7.1000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.6121	0.6121	2.0000e-005	0.0000	0.6125

Total	**2.7700e-003**	**0.0865**	**0.0199**	**2.4000e-004**	**5.7500e-003**	**2.8000e-004**	**6.0400e-003**	**1.5800e-003**	**2.7000e-004**	**1.8400e-003**	**0.0000**	**23.3027**	**23.3027**	**1.0600e-003**	**0.0000**	**23.3290**

3.4 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					0.0665	0.0000	0.0665	0.0338	0.0000	0.0338	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0243	0.2639	0.1605	3.0000e-004		0.0127	0.0127		0.0117	0.0117	0.0000	26.0588	26.0588	8.4300e-003	0.0000	26.2694
Total	**0.0243**	**0.2639**	**0.1605**	**3.0000e-004**	**0.0665**	**0.0127**	**0.0792**	**0.0338**	**0.0117**	**0.0455**	**0.0000**	**26.0588**	**26.0588**	**8.4300e-003**	**0.0000**	**26.2694**

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	9.0400e-003	0.3156	0.0646	8.6000e-004	0.0184	1.0300e-003	0.0195	5.0700e-003	9.8000e-004	6.0500e-003	0.0000	82.9445	82.9445	3.7900e-003	0.0000	83.0394
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-004	3.6000e-004	3.7500e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	1.0202	1.0202	3.0000e-005	0.0000	1.0209
Total	**9.5400e-003**	**0.3159**	**0.0684**	**8.7000e-004**	**0.0196**	**1.0400e-003**	**0.0207**	**5.3900e-003**	**9.9000e-004**	**6.3700e-003**	**0.0000**	**83.9647**	**83.9647**	**3.8200e-003**	**0.0000**	**84.0602**

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					0.0665	0.0000	0.0665	0.0338	0.0000	0.0338	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0243	0.2639	0.1605	3.0000e-004		0.0127	0.0127		0.0117	0.0117	0.0000	26.0587	26.0587	8.4300e-003	0.0000	26.2694
Total	**0.0243**	**0.2639**	**0.1605**	**3.0000e-004**	**0.0665**	**0.0127**	**0.0792**	**0.0338**	**0.0117**	**0.0455**	**0.0000**	**26.0587**	**26.0587**	**8.4300e-003**	**0.0000**	**26.2694**

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	9.0400e-003	0.3156	0.0646	8.6000e-004	0.0184	1.0300e-003	0.0195	5.0700e-003	9.8000e-004	6.0500e-003	0.0000	82.9445	82.9445	3.7900e-003	0.0000	83.0394
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-004	3.6000e-004	3.7500e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	1.0202	1.0202	3.0000e-005	0.0000	1.0209
Total	**9.5400e-003**	**0.3159**	**0.0684**	**8.7000e-004**	**0.0196**	**1.0400e-003**	**0.0207**	**5.3900e-003**	**9.9000e-004**	**6.3700e-003**	**0.0000**	**83.9647**	**83.9647**	**3.8200e-003**	**0.0000**	**84.0602**

3.5 Trenching - 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	2.2700e-003	0.0226	0.0277	4.0000e-005		1.2500e-003	1.2500e-003		1.1500e-003	1.1500e-003	0.0000	3.6328	3.6328	1.1700e-003	0.0000	3.6621
Total	**2.2700e-003**	**0.0226**	**0.0277**	**4.0000e-005**		**1.2500e-003**	**1.2500e-003**		**1.1500e-003**	**1.1500e-003**	**0.0000**	**3.6328**	**3.6328**	**1.1700e-003**	**0.0000**	**3.6621**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-005	6.0000e-005	6.3000e-004	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1700	0.1700	0.0000	0.0000	0.1701
Total	**8.0000e-005**	**6.0000e-005**	**6.3000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**2.0000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.1700**	**0.1700**	**0.0000**	**0.0000**	**0.1701**

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	2.2700e-003	0.0226	0.0277	4.0000e-005		1.2500e-003	1.2500e-003		1.1500e-003	1.1500e-003	0.0000	3.6328	3.6328	1.1700e-003	0.0000	3.6621
Total	**2.2700e-003**	**0.0226**	**0.0277**	**4.0000e-005**		**1.2500e-003**	**1.2500e-003**		**1.1500e-003**	**1.1500e-003**	**0.0000**	**3.6328**	**3.6328**	**1.1700e-003**	**0.0000**	**3.6621**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-005	6.0000e-005	6.3000e-004	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1700	0.1700	0.0000	0.0000	0.1701
Total	**8.0000e-005**	**6.0000e-005**	**6.3000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**2.0000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.1700**	**0.1700**	**0.0000**	**0.0000**	**0.1701**

3.6 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1102	0.9977	0.8761	1.4000e-003		0.0581	0.0581		0.0546	0.0546	0.0000	120.4372	120.4372	0.0294	0.0000	121.1718
Total	**0.1102**	**0.9977**	**0.8761**	**1.4000e-003**		**0.0581**	**0.0581**		**0.0546**	**0.0546**	**0.0000**	**120.4372**	**120.4372**	**0.0294**	**0.0000**	**121.1718**

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	0.0115	0.3316	0.0883	7.9000e-004	0.0192	1.6400e-003	0.0208	5.5400e-003	1.5700e-003	7.1100e-003	0.0000	76.1321	76.1321	3.4900e-003	0.0000	76.2194
Worker	0.0468	0.0336	0.3527	1.0600e-003	0.1118	7.2000e-004	0.1125	0.0297	6.7000e-004	0.0304	0.0000	95.8467	95.8467	2.3500e-003	0.0000	95.9054
Total	**0.0584**	**0.3652**	**0.4410**	**1.8500e-003**	**0.1309**	**2.3600e-003**	**0.1333**	**0.0353**	**2.2400e-003**	**0.0375**	**0.0000**	**171.9788**	**171.9788**	**5.8400e-003**	**0.0000**	**172.1249**

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	0.1102	0.9977	0.8761	1.4000e-003		0.0581	0.0581		0.0546	0.0546	0.0000	120.4371	120.4371	0.0294	0.0000	121.1716
Total	**0.1102**	**0.9977**	**0.8761**	**1.4000e-003**		**0.0581**	**0.0581**		**0.0546**	**0.0546**	**0.0000**	**120.4371**	**120.4371**	**0.0294**	**0.0000**	**121.1716**

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	0.0115	0.3316	0.0883	7.9000e-004	0.0192	1.6400e-003	0.0208	5.5400e-003	1.5700e-003	7.1100e-003	0.0000	76.1321	76.1321	3.4900e-003	0.0000	76.2194
Worker	0.0468	0.0336	0.3527	1.0600e-003	0.1118	7.2000e-004	0.1125	0.0297	6.7000e-004	0.0304	0.0000	95.8467	95.8467	2.3500e-003	0.0000	95.9054
Total	**0.0584**	**0.3652**	**0.4410**	**1.8500e-003**	**0.1309**	**2.3600e-003**	**0.1333**	**0.0353**	**2.2400e-003**	**0.0375**	**0.0000**	**171.9788**	**171.9788**	**5.8400e-003**	**0.0000**	**172.1249**

3.6 Building Construction - 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	0.1198	1.0982	1.0442	1.7000e-003		0.0604	0.0604		0.0568	0.0568	0.0000	145.9315	145.9315	0.0352	0.0000	146.8117
Total	**0.1198**	**1.0982**	**1.0442**	**1.7000e-003**		**0.0604**	**0.0604**		**0.0568**	**0.0568**	**0.0000**	**145.9315**	**145.9315**	**0.0352**	**0.0000**	**146.8117**

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	0.0115	0.3625	0.0965	9.5000e-004	0.0232	8.0000e-004	0.0240	6.7100e-003	7.7000e-004	7.4800e-003	0.0000	91.3856	91.3856	3.9800e-003	0.0000	91.4851
Worker	0.0526	0.0364	0.3906	1.2400e-003	0.1354	8.5000e-004	0.1363	0.0360	7.8000e-004	0.0368	0.0000	112.0914	112.0914	2.5500e-003	0.0000	112.1551
Total	**0.0641**	**0.3990**	**0.4871**	**2.1900e-003**	**0.1586**	**1.6500e-003**	**0.1603**	**0.0427**	**1.5500e-003**	**0.0443**	**0.0000**	**203.4770**	**203.4770**	**6.5300e-003**	**0.0000**	**203.6403**

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	0.1198	1.0982	1.0442	1.7000e-003		0.0604	0.0604		0.0568	0.0568	0.0000	145.9313	145.9313	0.0352	0.0000	146.8115
Total	**0.1198**	**1.0982**	**1.0442**	**1.7000e-003**		**0.0604**	**0.0604**		**0.0568**	**0.0568**	**0.0000**	**145.9313**	**145.9313**	**0.0352**	**0.0000**	**146.8115**

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	0.0115	0.3625	0.0965	9.5000e-004	0.0232	8.0000e-004	0.0240	6.7100e-003	7.7000e-004	7.4800e-003	0.0000	91.3856	91.3856	3.9800e-003	0.0000	91.4851
Worker	0.0526	0.0364	0.3906	1.2400e-003	0.1354	8.5000e-004	0.1363	0.0360	7.8000e-004	0.0368	0.0000	112.0914	112.0914	2.5500e-003	0.0000	112.1551
Total	**0.0641**	**0.3990**	**0.4871**	**2.1900e-003**	**0.1586**	**1.6500e-003**	**0.1603**	**0.0427**	**1.5500e-003**	**0.0443**	**0.0000**	**203.4770**	**203.4770**	**6.5300e-003**	**0.0000**	**203.6403**

3.7 Paving - 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	0.0126	0.1292	0.1465	2.3000e-004		6.7800e-003	6.7800e-003		6.2400e-003	6.2400e-003	0.0000	20.0235	20.0235	6.4800e-003	0.0000	20.1854
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0126**	**0.1292**	**0.1465**	**2.3000e-004**		**6.7800e-003**	**6.7800e-003**		**6.2400e-003**	**6.2400e-003**	**0.0000**	**20.0235**	**20.0235**	**6.4800e-003**	**0.0000**	**20.1854**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.5000e-004	3.8000e-004	4.1200e-003	1.0000e-005	1.4300e-003	1.0000e-005	1.4400e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1818	1.1818	3.0000e-005	0.0000	1.1825
Total	**5.5000e-004**	**3.8000e-004**	**4.1200e-003**	**1.0000e-005**	**1.4300e-003**	**1.0000e-005**	**1.4400e-003**	**3.8000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.1818**	**1.1818**	**3.0000e-005**	**0.0000**	**1.1825**

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	0.0126	0.1292	0.1465	2.3000e-004		6.7800e-003	6.7800e-003		6.2400e-003	6.2400e-003	0.0000	20.0235	20.0235	6.4800e-003	0.0000	20.1854

Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0126**	**0.1292**	**0.1465**	**2.3000e-004**		**6.7800e-003**	**6.7800e-003**		**6.2400e-003**	**6.2400e-003**	**0.0000**	**20.0235**	**20.0235**	**6.4800e-003**	**0.0000**	**20.1854**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.5000e-004	3.8000e-004	4.1200e-003	1.0000e-005	1.4300e-003	1.0000e-005	1.4400e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1818	1.1818	3.0000e-005	0.0000	1.1825
Total	**5.5000e-004**	**3.8000e-004**	**4.1200e-003**	**1.0000e-005**	**1.4300e-003**	**1.0000e-005**	**1.4400e-003**	**3.8000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.1818**	**1.1818**	**3.0000e-005**	**0.0000**	**1.1825**

3.8 Architectural Coating - 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	2.9890					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1900e-003	0.0153	0.0182	3.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576
Total	**2.9912**	**0.0153**	**0.0182**	**3.0000e-005**		**9.4000e-004**	**9.4000e-004**		**9.4000e-004**	**9.4000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.8000e-004**	**0.0000**	**2.5576**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7900e-003	1.2400e-003	0.0133	4.0000e-005	4.6000e-003	3.0000e-005	4.6300e-003	1.2200e-003	3.0000e-005	1.2500e-003	0.0000	3.8079	3.8079	9.0000e-005	0.0000	3.8101
Total	**1.7900e-003**	**1.2400e-003**	**0.0133**	**4.0000e-005**	**4.6000e-003**	**3.0000e-005**	**4.6300e-003**	**1.2200e-003**	**3.0000e-005**	**1.2500e-003**	**0.0000**	**3.8079**	**3.8079**	**9.0000e-005**	**0.0000**	**3.8101**

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	2.9890					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1900e-003	0.0153	0.0182	3.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576
Total	**2.9912**	**0.0153**	**0.0182**	**3.0000e-005**		**9.4000e-004**	**9.4000e-004**		**9.4000e-004**	**9.4000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.8000e-004**	**0.0000**	**2.5576**

Mitigated Construction Off-Site

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

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7900e-003	1.2400e-003	0.0133	4.0000e-005	4.6000e-003	3.0000e-005	4.6300e-003	1.2200e-003	3.0000e-005	1.2500e-003	0.0000	3.8079	3.8079	9.0000e-005	0.0000	3.8101
Total	**1.7900e-003**	**1.2400e-003**	**0.0133**	**4.0000e-005**	**4.6000e-003**	**3.0000e-005**	**4.6300e-003**	**1.2200e-003**	**3.0000e-005**	**1.2500e-003**	**0.0000**	**3.8079**	**3.8079**	**9.0000e-005**	**0.0000**	**3.8101**

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	0.4647	1.9749	5.4301	0.0188	1.7371	0.0160	1.7531	0.4650	0.0149	0.4799	0.0000	1,723.1914	1,723.1914	0.0581	0.0000	1,724.6430
Unmitigated	0.4647	1.9749	5.4301	0.0188	1.7371	0.0160	1.7531	0.4650	0.0149	0.4799	0.0000	1,723.1914	1,723.1914	0.0581	0.0000	1,724.6430

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,200.60	1,154.20	1058.50	2,710,720	2,710,720
Enclosed Parking with Elevator	0.00	0.00	0.00		
General Office Building	1,080.00	240.84	102.60	1,960,772	1,960,772
Total	2,280.60	1,395.04	1,161.10	4,671,492	4,671,492

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.610498	0.036775	0.183084	0.106123	0.014413	0.005007	0.012610	0.021118	0.002144	0.001548	0.005312	0.000627	0.000740
Enclosed Parking with Elevator	0.610498	0.036775	0.183084	0.106123	0.014413	0.005007	0.012610	0.021118	0.002144	0.001548	0.005312	0.000627	0.000740
General Office Building	0.610498	0.036775	0.183084	0.106123	0.014413	0.005007	0.012610	0.021118	0.002144	0.001548	0.005312	0.000627	0.000740

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	404.0776	404.0776	0.0404	8.3600e-003	407.5792
NaturalGas Mitigated	0.0183	0.1588	0.0855	1.0000e-003		0.0126	0.0126		0.0126	0.0126	0.0000	180.8724	180.8724	3.4700e-003	3.3200e-003	181.9472
NaturalGas Unmitigated	0.0183	0.1588	0.0855	1.0000e-003		0.0126	0.0126		0.0126	0.0126	0.0000	180.8724	180.8724	3.4700e-003	3.3200e-003	181.9472

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	2.50544e+006	0.0135	0.1155	0.0491	7.4000e-004		9.3300e-003	9.3300e-003		9.3300e-003	9.3300e-003	0.0000	133.6999	133.6999	2.5600e-003	2.4500e-003	134.4944
Enclosed 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
General Office Building	883980	4.7700e-003	0.0433	0.0364	2.6000e-004		3.2900e-003	3.2900e-003		3.2900e-003	3.2900e-003	0.0000	47.1725	47.1725	9.0000e-004	8.6000e-004	47.4529
Total		**0.0183**	**0.1588**	**0.0855**	**1.0000e-003**		**0.0126**	**0.0126**		**0.0126**	**0.0126**	**0.0000**	**180.8724**	**180.8724**	**3.4600e-003**	**3.3100e-003**	**181.9472**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	2.50544e+006	0.0135	0.1155	0.0491	7.4000e-004		9.3300e-003	9.3300e-003		9.3300e-003	9.3300e-003	0.0000	133.6999	133.6999	2.5600e-003	2.4500e-003	134.4944
Enclosed 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
General Office Building	883980	4.7700e-003	0.0433	0.0364	2.6000e-004		3.2900e-003	3.2900e-003		3.2900e-003	3.2900e-003	0.0000	47.1725	47.1725	9.0000e-004	8.6000e-004	47.4529
Total		**0.0183**	**0.1588**	**0.0855**	**1.0000e-003**		**0.0126**	**0.0126**		**0.0126**	**0.0126**	**0.0000**	**180.8724**	**180.8724**	**3.4600e-003**	**3.3100e-003**	**181.9472**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.19722e+006	157.4847	0.0158	3.2600e-003	158.8493
Enclosed Parking with Elevator	911816	119.9419	0.0120	2.4800e-003	120.9813
General Office Building	962820	126.6511	0.0127	2.6200e-003	127.7486
Total		**404.0776**	**0.0404**	**8.3600e-003**	**407.5792**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	2.0706	0.0349	2.1639	1.8000e-004		0.0127	0.0127		0.0127	0.0127	0.0000	15.1104	15.1104	3.6400e-003	2.1000e-004	15.2646
Unmitigated	2.0706	0.0349	2.1639	1.8000e-004		0.0127	0.0127		0.0127	0.0127	0.0000	15.1104	15.1104	3.6400e-003	2.1000e-004	15.2646

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	0.2989					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.7051					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.1700e-003	0.0100	4.2600e-003	6.0000e-005		8.1000e-004	8.1000e-004		8.1000e-004	8.1000e-004	0.0000	11.5851	11.5851	2.2000e-004	2.1000e-004	11.6539
Landscaping	0.0655	0.0249	2.1597	1.1000e-004		0.0119	0.0119		0.0119	0.0119	0.0000	3.5253	3.5253	3.4100e-003	0.0000	3.6106
Total	**2.0706**	**0.0349**	**2.1639**	**1.7000e-004**		**0.0127**	**0.0127**		**0.0127**	**0.0127**	**0.0000**	**15.1104**	**15.1104**	**3.6300e-003**	**2.1000e-004**	**15.2646**

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	0.2989					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.7051					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.1700e-003	0.0100	4.2600e-003	6.0000e-005		8.1000e-004	8.1000e-004		8.1000e-004	8.1000e-004	0.0000	11.5851	11.5851	2.2000e-004	2.1000e-004	11.6539
Landscaping	0.0655	0.0249	2.1597	1.1000e-004		0.0119	0.0119		0.0119	0.0119	0.0000	3.5253	3.5253	3.4100e-003	0.0000	3.6106
Total	**2.0706**	**0.0349**	**2.1639**	**1.7000e-004**		**0.0127**	**0.0127**		**0.0127**	**0.0127**	**0.0000**	**15.1104**	**15.1104**	**3.6300e-003**	**2.1000e-004**	**15.2646**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	38.5531	0.0375	0.0225	46.2000
Unmitigated	38.5531	0.0375	0.0225	46.2000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	18.8947 / 11.9119	25.6178	0.0249	0.0149	30.6893
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	9.59762 / 5.88241	12.9352	0.0126	7.5800e-003	15.5106
Total		**38.5531**	**0.0375**	**0.0225**	**46.2000**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	18.8947 / 11.9119	25.6178	0.0249	0.0149	30.6893
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	9.59762 / 5.88241	12.9352	0.0126	7.5800e-003	15.5106
Total		**38.5531**	**0.0375**	**0.0225**	**46.2000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	37.2732	2.2028	0.0000	92.3428
Unmitigated	37.2732	2.2028	0.0000	92.3428

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	133.4	27.0790	1.6003	0.0000	67.0871
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	50.22	10.1942	0.6025	0.0000	25.2557
Total		**37.2732**	**2.2028**	**0.0000**	**92.3428**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	133.4	27.0790	1.6003	0.0000	67.0871

Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	50.22	10.1942	0.6025	0.0000	25.2557
Total		**37.2732**	**2.2028**	**0.0000**	**92.3428**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

SCU Faculty Housing & Tech Center - Existing - Santa Clara County, Annual

SCU Faculty Housing & Tech Center - Existing

Santa Clara County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	44.10	1000sqft	1.01	44,100.00	0
Parking Lot	85.00	1000sqft	1.95	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**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Existing project land uses

Construction Phase - Existing land use

Off-road Equipment - existing use

Grading -

Energy Use - Historical energy data

Table Name	Column Name	Default Value	New Value

tblConstructionPhase	NumDays	3.00	1.00
tblConstructionPhase	PhaseEndDate	7/1/2020	6/29/2020
tblEnergyUse	LightingElect	3.80	3.08
tblEnergyUse	LightingElect	0.88	0.35
tblEnergyUse	T24E	1.93	1.48
tblEnergyUse	T24NG	22.58	19.71
tblGrading	AcresOfGrading	0.00	1.50
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblTripsAndVMT	WorkerTripNumber	0.00	8.00

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	0.2026	1.0000e-005	1.1900e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.3100e-003	2.3100e-003	1.0000e-005	0.0000	2.4600e-003
Energy	6.2700e-003	0.0570	0.0479	3.4000e-004		4.3300e-003	4.3300e-003		4.3300e-003	4.3300e-003	0.0000	176.7050	176.7050	6.3700e-003	2.2100e-003	177.5230
Mobile	0.0586	0.2606	0.7471	2.6900e-003	0.2520	2.2600e-003	0.2543	0.0675	2.1100e-003	0.0696	0.0000	246.5888	246.5888	7.9800e-003	0.0000	246.7882
Waste						0.0000	0.0000		0.0000	0.0000	11.0996	0.0000	11.0996	0.6560	0.0000	27.4987

Water						0.0000	0.0000		0.0000	0.0000	3.2354	16.0531	19.2885	0.3330	8.0000e-003	29.9973
Total	**0.2675**	**0.3177**	**0.7962**	**3.0300e-003**	**0.2520**	**6.5900e-003**	**0.2586**	**0.0675**	**6.4400e-003**	**0.0739**	**14.3349**	**439.3492**	**453.6842**	**1.0034**	**0.0102**	**481.8097**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.2026	1.0000e-005	1.1900e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.3100e-003	2.3100e-003	1.0000e-005	0.0000	2.4600e-003
Energy	6.2700e-003	0.0570	0.0479	3.4000e-004		4.3300e-003	4.3300e-003		4.3300e-003	4.3300e-003	0.0000	176.7050	176.7050	6.3700e-003	2.2100e-003	177.5230
Mobile	0.0586	0.2606	0.7471	2.6900e-003	0.2520	2.2600e-003	0.2543	0.0675	2.1100e-003	0.0696	0.0000	246.5888	246.5888	7.9800e-003	0.0000	246.7882
Waste						0.0000	0.0000		0.0000	0.0000	11.0996	0.0000	11.0996	0.6560	0.0000	27.4987
Water						0.0000	0.0000		0.0000	0.0000	3.2354	16.0531	19.2885	0.3330	8.0000e-003	29.9973
Total	**0.2675**	**0.3177**	**0.7962**	**3.0300e-003**	**0.2520**	**6.5900e-003**	**0.2586**	**0.0675**	**6.4400e-003**	**0.0739**	**14.3349**	**439.3492**	**453.6842**	**1.0034**	**0.0102**	**481.8097**

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

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	0.0586	0.2606	0.7471	2.6900e-003	0.2520	2.2600e-003	0.2543	0.0675	2.1100e-003	0.0696	0.0000	246.5888	246.5888	7.9800e-003	0.0000	246.7882
Unmitigated	0.0586	0.2606	0.7471	2.6900e-003	0.2520	2.2600e-003	0.2543	0.0675	2.1100e-003	0.0696	0.0000	246.5888	246.5888	7.9800e-003	0.0000	246.7882

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	307.38	58.21	29.99	677,779	677,779
Parking Lot	0.00	0.00	0.00		
Total	307.38	58.21	29.99	677,779	677,779

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.610498	0.036775	0.183084	0.106123	0.014413	0.005007	0.012610	0.021118	0.002144	0.001548	0.005312	0.000627	0.000740
Parking Lot	0.610498	0.036775	0.183084	0.106123	0.014413	0.005007	0.012610	0.021118	0.002144	0.001548	0.005312	0.000627	0.000740

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	0.0000	114.6238	114.6238	5.1800e-003	1.0700e-003	115.0729
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	114.6238	114.6238	5.1800e-003	1.0700e-003	115.0729
NaturalGas Mitigated	6.2700e-003	0.0570	0.0479	3.4000e-004		4.3300e-003	4.3300e-003		4.3300e-003	4.3300e-003	0.0000	62.0812	62.0812	1.1900e-003	1.1400e-003	62.4501
NaturalGas Unmitigated	6.2700e-003	0.0570	0.0479	3.4000e-004		4.3300e-003	4.3300e-003		4.3300e-003	4.3300e-003	0.0000	62.0812	62.0812	1.1900e-003	1.1400e-003	62.4501

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	1.16336e+006	6.2700e-003	0.0570	0.0479	3.4000e-004		4.3300e-003	4.3300e-003		4.3300e-003	4.3300e-003	0.0000	62.0812	62.0812	1.1900e-003	1.1400e-003	62.4501
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**6.2700e-003**	**0.0570**	**0.0479**	**3.4000e-004**		**4.3300e-003**	**4.3300e-003**		**4.3300e-003**	**4.3300e-003**	**0.0000**	**62.0812**	**62.0812**	**1.1900e-003**	**1.1400e-003**	**62.4501**

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	1.16336e+006	6.2700e-003	0.0570	0.0479	3.4000e-004		4.3300e-003	4.3300e-003		4.3300e-003	4.3300e-003	0.0000	62.0812	62.0812	1.1900e-003	1.1400e-003	62.4501
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**6.2700e-003**	**0.0570**	**0.0479**	**3.4000e-004**		**4.3300e-003**	**4.3300e-003**		**4.3300e-003**	**4.3300e-003**	**0.0000**	**62.0812**	**62.0812**	**1.1900e-003**	**1.1400e-003**	**62.4501**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	364266	105.9692	4.7900e-003	9.9000e-004	106.3844
Parking Lot	29750	8.6546	3.9000e-004	8.0000e-005	8.6885
Total		**114.6238**	**5.1800e-003**	**1.0700e-003**	**115.0729**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	364266	105.9692	4.7900e-003	9.9000e-004	106.3844
Parking Lot	29750	8.6546	3.9000e-004	8.0000e-005	8.6885
Total		**114.6238**	**5.1800e-003**	**1.0700e-003**	**115.0729**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2026	1.0000e-005	1.1900e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.3100e-003	2.3100e-003	1.0000e-005	0.0000	2.4600e-003
Unmitigated	0.2026	1.0000e-005	1.1900e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.3100e-003	2.3100e-003	1.0000e-005	0.0000	2.4600e-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	0.0248					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1777					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.1000e-004	1.0000e-005	1.1900e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.3100e-003	2.3100e-003	1.0000e-005	0.0000	2.4600e-003
Total	**0.2026**	**1.0000e-005**	**1.1900e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.3100e-003**	**2.3100e-003**	**1.0000e-005**	**0.0000**	**2.4600e-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	0.0248					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1777					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.1000e-004	1.0000e-005	1.1900e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.3100e-003	2.3100e-003	1.0000e-005	0.0000	2.4600e-003
Total	**0.2026**	**1.0000e-005**	**1.1900e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.3100e-003**	**2.3100e-003**	**1.0000e-005**	**0.0000**	**2.4600e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	19.2885	0.3330	8.0000e-003	29.9973
Unmitigated	19.2885	0.3330	8.0000e-003	29.9973

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	10.1981 / 0	19.2885	0.3330	8.0000e-003	29.9973
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**19.2885**	**0.3330**	**8.0000e-003**	**29.9973**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	10.1981 / 0	19.2885	0.3330	8.0000e-003	29.9973
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**19.2885**	**0.3330**	**8.0000e-003**	**29.9973**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			

Mitigated	11.0996	0.6560	0.0000	27.4987
Unmitigated	11.0996	0.6560	0.0000	27.4987

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	54.68	11.0996	0.6560	0.0000	27.4987
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**11.0996**	**0.6560**	**0.0000**	**27.4987**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	54.68	11.0996	0.6560	0.0000	27.4987
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**11.0996**	**0.6560**	**0.0000**	**27.4987**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

SCU Faculty Housing & Tech Center - Santa Clara County, Annual

SCU Faculty Housing & Tech Center - 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	54.00	1000sqft	0.00	54,000.00	0
Enclosed Parking with Elevator	389.00	Space	0.00	155,600.00	0
Apartments Mid Rise	290.00	Dwelling Unit	2.99	380,000.00	829

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E 2020 Rates = 290

Land Use - Applicant provided land uses

Construction Phase - Applicant approved Default construction schedule plus trenching

Off-road Equipment -

Off-road Equipment - Applicant approved construction Equip

Off-road Equipment - Applicant approved construction Equip

Off-road Equipment - Applicant approved construction Equip

Off-road Equipment - Applicant approved construction Equip

Off-road Equipment - Applicant approved construction Equip

Off-road Equipment - Applicant approved construction Equip, Added Trenching

Trips and VMT - 1 Mile TAC trips

Demolition - Existing building demo = 44,100sf

Grading - Site Prep = 2,488cy import, 2,269cy export, Grading = 17,397cy export

Vehicle Trips - Apts w/ reductions = 4.14, 3.98, 3.65, Office w/ reductions = 20.00, 4.46, 1.90

Woodstoves - No wood, all gas

Energy Use -

Water And Wastewater - WTP treatment 100% aerobic

Construction Off-road Equipment Mitigation - BMPs, Tier 3 DPF3 Mitigation, Line power provided eletric portable equip

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	FuelType	Diesel	Electrical
tblConstEquipMitigation	FuelType	Diesel	Electrical

tblConstEquipMitigation	FuelType	Diesel	Electrical
tblConstEquipMitigation	FuelType	Diesel	Electrical
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	12.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3

tblConstructionPhase	NumDays	10.00	20.00
tblConstructionPhase	NumDays	220.00	230.00
tblConstructionPhase	NumDays	6.00	20.00
tblConstructionPhase	NumDays	10.00	20.00
tblConstructionPhase	NumDays	3.00	10.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	43.50	92.80
tblFireplaces	NumberWood	49.30	0.00
tblGrading	MaterialExported	0.00	17,397.00
tblGrading	MaterialExported	0.00	2,269.00
tblGrading	MaterialImported	0.00	2,488.00
tblLandUse	LandUseSquareFeet	290,000.00	380,000.00
tblLandUse	LotAcreage	1.24	0.00
tblLandUse	LotAcreage	3.50	0.00
tblLandUse	LotAcreage	7.63	2.99
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	7.00	8.00

tblOffRoadEquipment	UsageHours	8.00	0.50
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	6.00	7.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripNumber	65.00	56.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00

tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblTripsAndVMT	WorkerTripNumber	291.00	271.00
tblVehicleTrips	ST_TR	6.39	3.98
tblVehicleTrips	ST_TR	2.46	4.46
tblVehicleTrips	SU_TR	5.86	3.65
tblVehicleTrips	SU_TR	1.05	1.90
tblVehicleTrips	WD_TR	6.65	4.14
tblVehicleTrips	WD_TR	11.03	20.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	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	0.1956	2.0140	1.3830	2.5700e-003	0.1936	0.0907	0.2843	0.0908	0.0840	0.1749	0.0000	227.7565	227.7565	0.0573	0.0000	229.1884
2021	3.1264	1.2880	1.1571	2.0100e-003	0.0165	0.0586	0.0751	4.5000e-003	0.0544	0.0589	0.0000	177.1871	177.1871	0.0433	0.0000	178.2698

Maximum	**3.1264**	**2.0140**	**1.3830**	**2.5700e-003**	**0.1936**	**0.0907**	**0.2843**	**0.0908**	**0.0840**	**0.1749**	**0.0000**	**227.7565**	**227.7565**	**0.0573**	**0.0000**	**229.1884**

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	0.0684	1.2702	1.3590	2.5700e-003	0.0952	8.2300e-003	0.1035	0.0236	8.2000e-003	0.0318	0.0000	210.7553	210.7553	0.0554	0.0000	212.1400
2021	3.0461	0.9457	1.1149	2.0100e-003	0.0165	6.8600e-003	0.0234	4.5000e-003	6.8400e-003	0.0113	0.0000	160.5503	160.5503	0.0415	0.0000	161.5872
Maximum	**3.0461**	**1.2702**	**1.3590**	**2.5700e-003**	**0.0952**	**8.2300e-003**	**0.1035**	**0.0236**	**8.2000e-003**	**0.0318**	**0.0000**	**210.7553**	**210.7553**	**0.0554**	**0.0000**	**212.1400**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**6.25**	**32.89**	**2.61**	**0.00**	**46.81**	**89.89**	**64.70**	**70.57**	**89.13**	**81.56**	**0.00**	**8.31**	**8.31**	**3.70**	**0.00**	**8.28**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**6-1-2020**	**8-31-2020**	1.2313	0.7093
2	**9-1-2020**	**11-30-2020**	0.7137	0.4634
3	**12-1-2020**	**2-28-2021**	0.6651	0.4521
4	**3-1-2021**	**5-31-2021**	0.6609	0.4617
5	**6-1-2021**	**8-31-2021**	3.3293	3.2346
		Highest	3.3293	3.2346

3.0 Construction Detail

Construction Phase

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

1	Demolition	Demolition	6/1/2020	6/26/2020	5	20	
2	Site Preparation	Site Preparation	6/27/2020	7/10/2020	5	10	
3	Grading	Grading	7/11/2020	8/7/2020	5	20	
4	Trenching	Trenching	7/11/2020	7/24/2020	5	10	
5	Building Construction	Building Construction	8/8/2020	6/25/2021	5	230	
6	Paving	Paving	6/26/2021	7/23/2021	5	20	
7	Architectural Coating	Architectural Coating	7/24/2021	8/20/2021	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 769,500; Residential Outdoor: 256,500; Non-Residential Indoor: 81,000; Non-Residential Outdoor: 27,000; Striped

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Site Preparation	Graders	0	0.00	187	0.41
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Scrapers	0	0.00	367	0.48
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Trenching	Excavators	1	8.00	158	0.38
Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29

Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	0.50	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Cement and Mortar Mixers	0	0.00	9	0.56
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	0.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	201.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	595.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	2,175.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Trenching	2	5.00	0.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	271.00	56.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	58.00	0.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Alternative Fuel for Construction Equipment

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Use Soil Stabilizer

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 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					0.0217	0.0000	0.0217	3.2900e-003	0.0000	3.2900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0331	0.3320	0.2175	3.9000e-004		0.0166	0.0166		0.0154	0.0154	0.0000	33.9986	33.9986	9.6000e-003	0.0000	34.2386
Total	**0.0331**	**0.3320**	**0.2175**	**3.9000e-004**	**0.0217**	**0.0166**	**0.0383**	**3.2900e-003**	**0.0154**	**0.0187**	**0.0000**	**33.9986**	**33.9986**	**9.6000e-003**	**0.0000**	**34.2386**

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	2.2000e-004	0.0104	1.6900e-003	1.0000e-005	9.0000e-005	1.0000e-005	1.0000e-004	2.0000e-005	1.0000e-005	3.0000e-005	0.0000	1.3053	1.3053	1.4000e-004	0.0000	1.3088
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e-004	8.0000e-005	9.8000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1220	0.1220	1.0000e-005	0.0000	0.1221
Total	**3.9000e-004**	**0.0104**	**2.6700e-003**	**1.0000e-005**	**2.0000e-004**	**1.0000e-005**	**2.1000e-004**	**5.0000e-005**	**1.0000e-005**	**6.0000e-005**	**0.0000**	**1.4273**	**1.4273**	**1.5000e-004**	**0.0000**	**1.4309**

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					9.7700e-003	0.0000	9.7700e-003	7.4000e-004	0.0000	7.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.9900e-003	0.1546	0.2082	3.9000e-004		9.9000e-004	9.9000e-004		9.9000e-004	9.9000e-004	0.0000	28.6220	28.6220	9.2600e-003	0.0000	28.8534
Total	**7.9900e-003**	**0.1546**	**0.2082**	**3.9000e-004**	**9.7700e-003**	**9.9000e-004**	**0.0108**	**7.4000e-004**	**9.9000e-004**	**1.7300e-003**	**0.0000**	**28.6220**	**28.6220**	**9.2600e-003**	**0.0000**	**28.8534**

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	2.2000e-004	0.0104	1.6900e-003	1.0000e-005	9.0000e-005	1.0000e-005	1.0000e-004	2.0000e-005	1.0000e-005	3.0000e-005	0.0000	1.3053	1.3053	1.4000e-004	0.0000	1.3088
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e-004	8.0000e-005	9.8000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1220	0.1220	1.0000e-005	0.0000	0.1221
Total	**3.9000e-004**	**0.0104**	**2.6700e-003**	**1.0000e-005**	**2.0000e-004**	**1.0000e-005**	**2.1000e-004**	**5.0000e-005**	**1.0000e-005**	**6.0000e-005**	**0.0000**	**1.4273**	**1.4273**	**1.5000e-004**	**0.0000**	**1.4309**

3.3 Site Preparation - 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					0.0906	0.0000	0.0906	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	0.0204	0.2121	0.1076	1.9000e-004		0.0110	0.0110		0.0101	0.0101	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505
Total	**0.0204**	**0.2121**	**0.1076**	**1.9000e-004**	**0.0906**	**0.0110**	**0.1016**	**0.0497**	**0.0101**	**0.0598**	**0.0000**	**16.7153**	**16.7153**	**5.4100e-003**	**0.0000**	**16.8505**

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	6.5000e-004	0.0307	5.0100e-003	4.0000e-005	2.6000e-004	3.0000e-005	2.9000e-004	7.0000e-005	3.0000e-005	1.0000e-004	0.0000	3.8639	3.8639	4.1000e-004	0.0000	3.8742
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	5.0000e-005	5.9000e-004	0.0000	7.0000e-005	0.0000	7.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0732	0.0732	0.0000	0.0000	0.0733
Total	**7.5000e-004**	**0.0307**	**5.6000e-003**	**4.0000e-005**	**3.3000e-004**	**3.0000e-005**	**3.6000e-004**	**9.0000e-005**	**3.0000e-005**	**1.2000e-004**	**0.0000**	**3.9371**	**3.9371**	**4.1000e-004**	**0.0000**	**3.9475**

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					0.0408	0.0000	0.0408	0.0112	0.0000	0.0112	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.6600e-003	0.0953	0.1148	1.9000e-004		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505
Total	**4.6600e-003**	**0.0953**	**0.1148**	**1.9000e-004**	**0.0408**	**7.1000e-004**	**0.0415**	**0.0112**	**7.1000e-004**	**0.0119**	**0.0000**	**16.7153**	**16.7153**	**5.4100e-003**	**0.0000**	**16.8505**

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	6.5000e-004	0.0307	5.0100e-003	4.0000e-005	2.6000e-004	3.0000e-005	2.9000e-004	7.0000e-005	3.0000e-005	1.0000e-004	0.0000	3.8639	3.8639	4.1000e-004	0.0000	3.8742
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	5.0000e-005	5.9000e-004	0.0000	7.0000e-005	0.0000	7.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0732	0.0732	0.0000	0.0000	0.0733
Total	**7.5000e-004**	**0.0307**	**5.6000e-003**	**4.0000e-005**	**3.3000e-004**	**3.0000e-005**	**3.6000e-004**	**9.0000e-005**	**3.0000e-005**	**1.2000e-004**	**0.0000**	**3.9371**	**3.9371**	**4.1000e-004**	**0.0000**	**3.9475**

3.4 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					0.0665	0.0000	0.0665	0.0338	0.0000	0.0338	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0243	0.2639	0.1605	3.0000e-004		0.0127	0.0127		0.0117	0.0117	0.0000	26.0588	26.0588	8.4300e-003	0.0000	26.2694
Total	**0.0243**	**0.2639**	**0.1605**	**3.0000e-004**	**0.0665**	**0.0127**	**0.0792**	**0.0338**	**0.0117**	**0.0455**	**0.0000**	**26.0588**	**26.0588**	**8.4300e-003**	**0.0000**	**26.2694**

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	2.3600e-003	0.1122	0.0183	1.5000e-004	9.4000e-004	1.1000e-004	1.0500e-003	2.6000e-004	1.0000e-004	3.6000e-004	0.0000	14.1244	14.1244	1.5000e-003	0.0000	14.1620
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e-004	8.0000e-005	9.8000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1220	0.1220	1.0000e-005	0.0000	0.1221
Total	**2.5300e-003**	**0.1122**	**0.0193**	**1.5000e-004**	**1.0500e-003**	**1.1000e-004**	**1.1600e-003**	**2.9000e-004**	**1.0000e-004**	**3.9000e-004**	**0.0000**	**14.2464**	**14.2464**	**1.5100e-003**	**0.0000**	**14.2841**

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					0.0299	0.0000	0.0299	7.6100e-003	0.0000	7.6100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.2600e-003	0.1484	0.1899	3.0000e-004		1.1300e-003	1.1300e-003		1.1300e-003	1.1300e-003	0.0000	26.0587	26.0587	8.4300e-003	0.0000	26.2694
Total	**7.2600e-003**	**0.1484**	**0.1899**	**3.0000e-004**	**0.0299**	**1.1300e-003**	**0.0311**	**7.6100e-003**	**1.1300e-003**	**8.7400e-003**	**0.0000**	**26.0587**	**26.0587**	**8.4300e-003**	**0.0000**	**26.2694**

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	2.3600e-003	0.1122	0.0183	1.5000e-004	9.4000e-004	1.1000e-004	1.0500e-003	2.6000e-004	1.0000e-004	3.6000e-004	0.0000	14.1244	14.1244	1.5000e-003	0.0000	14.1620
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Worker	1.7000e-004	8.0000e-005	9.8000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1220	0.1220	1.0000e-005	0.0000	0.1221
Total	**2.5300e-003**	**0.1122**	**0.0193**	**1.5000e-004**	**1.0500e-003**	**1.1000e-004**	**1.1600e-003**	**2.9000e-004**	**1.0000e-004**	**3.9000e-004**	**0.0000**	**14.2464**	**14.2464**	**1.5100e-003**	**0.0000**	**14.2841**

3.5 Trenching - 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	2.2700e-003	0.0226	0.0277	4.0000e-005		1.2500e-003	1.2500e-003		1.1500e-003	1.1500e-003	0.0000	3.6328	3.6328	1.1700e-003	0.0000	3.6621
Total	**2.2700e-003**	**0.0226**	**0.0277**	**4.0000e-005**		**1.2500e-003**	**1.2500e-003**		**1.1500e-003**	**1.1500e-003**	**0.0000**	**3.6328**	**3.6328**	**1.1700e-003**	**0.0000**	**3.6621**

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	3.0000e-005	1.0000e-005	1.6000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0203	0.0203	0.0000	0.0000	0.0204
Total	**3.0000e-005**	**1.0000e-005**	**1.6000e-004**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0203**	**0.0203**	**0.0000**	**0.0000**	**0.0204**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.0200e-003	0.0210	0.0313	4.0000e-005		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004	0.0000	3.6328	3.6328	1.1700e-003	0.0000	3.6621
Total	**1.0200e-003**	**0.0210**	**0.0313**	**4.0000e-005**		**1.8000e-004**	**1.8000e-004**		**1.8000e-004**	**1.8000e-004**	**0.0000**	**3.6328**	**3.6328**	**1.1700e-003**	**0.0000**	**3.6621**

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	3.0000e-005	1.0000e-005	1.6000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0203	0.0203	0.0000	0.0000	0.0204
Total	**3.0000e-005**	**1.0000e-005**	**1.6000e-004**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0203**	**0.0203**	**0.0000**	**0.0000**	**0.0204**

3.6 Building Construction - 2020

Unmitigated Construction On-Site

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

Category	tons/yr										MT/yr					
Off-Road	0.0908	0.8281	0.6955	1.0800e-003		0.0485	0.0485		0.0451	0.0451	0.0000	92.8833	92.8833	0.0278	0.0000	93.5791
Total	**0.0908**	**0.8281**	**0.6955**	**1.0800e-003**		**0.0485**	**0.0485**		**0.0451**	**0.0451**	**0.0000**	**92.8833**	**92.8833**	**0.0278**	**0.0000**	**93.5791**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.5000e-003	0.1948	0.0541	2.4000e-004	2.6900e-003	3.1000e-004	3.0000e-003	7.8000e-004	3.0000e-004	1.0900e-003	0.0000	23.3769	23.3769	2.2800e-003	0.0000	23.4339
Worker	0.0156	7.1500e-003	0.0924	1.3000e-004	0.0105	1.4000e-004	0.0106	2.8000e-003	1.3000e-004	2.9300e-003	0.0000	11.4597	11.4597	4.9000e-004	0.0000	11.4720
Total	**0.0211**	**0.2019**	**0.1465**	**3.7000e-004**	**0.0132**	**4.5000e-004**	**0.0136**	**3.5800e-003**	**4.3000e-004**	**4.0200e-003**	**0.0000**	**34.8365**	**34.8365**	**2.7700e-003**	**0.0000**	**34.9059**

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	0.4957	0.6407	1.0800e-003		4.6100e-003	4.6100e-003		4.6100e-003	4.6100e-003	0.0000	81.2588	81.2588	0.0263	0.0000	81.9159
Total	**0.0227**	**0.4957**	**0.6407**	**1.0800e-003**		**4.6100e-003**	**4.6100e-003**		**4.6100e-003**	**4.6100e-003**	**0.0000**	**81.2588**	**81.2588**	**0.0263**	**0.0000**	**81.9159**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.5000e-003	0.1948	0.0541	2.4000e-004	2.6900e-003	3.1000e-004	3.0000e-003	7.8000e-004	3.0000e-004	1.0900e-003	0.0000	23.3769	23.3769	2.2800e-003	0.0000	23.4339
Worker	0.0156	7.1500e-003	0.0924	1.3000e-004	0.0105	1.4000e-004	0.0106	2.8000e-003	1.3000e-004	2.9300e-003	0.0000	11.4597	11.4597	4.9000e-004	0.0000	11.4720
Total	**0.0211**	**0.2019**	**0.1465**	**3.7000e-004**	**0.0132**	**4.5000e-004**	**0.0136**	**3.5800e-003**	**4.3000e-004**	**4.0200e-003**	**0.0000**	**34.8365**	**34.8365**	**2.7700e-003**	**0.0000**	**34.9059**

3.6 Building Construction - 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	0.0987	0.9112	0.8266	1.3100e-003		0.0505	0.0505		0.0469	0.0469	0.0000	112.5489	112.5489	0.0335	0.0000	113.3865
Total	**0.0987**	**0.9112**	**0.8266**	**1.3100e-003**		**0.0505**	**0.0505**		**0.0469**	**0.0469**	**0.0000**	**112.5489**	**112.5489**	**0.0335**	**0.0000**	**113.3865**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.9500e-003	0.2243	0.0604	2.9000e-004	3.2600e-003	1.9000e-004	3.4500e-003	9.5000e-004	1.8000e-004	1.1300e-003	0.0000	28.0519	28.0519	2.6000e-003	0.0000	28.1170
Worker	0.0173	7.6300e-003	0.1009	1.5000e-004	0.0127	1.7000e-004	0.0129	3.4000e-003	1.6000e-004	3.5500e-003	0.0000	13.4125	13.4125	5.3000e-004	0.0000	13.4256
Total	**0.0232**	**0.2319**	**0.1613**	**4.4000e-004**	**0.0160**	**3.6000e-004**	**0.0163**	**4.3500e-003**	**3.4000e-004**	**4.6800e-003**	**0.0000**	**41.4644**	**41.4644**	**3.1300e-003**	**0.0000**	**41.5426**

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	0.0275	0.6005	0.7762	1.3100e-003		5.5800e-003	5.5800e-003		5.5800e-003	5.5800e-003	0.0000	98.4654	98.4654	0.0319	0.0000	99.2615
Total	**0.0275**	**0.6005**	**0.7762**	**1.3100e-003**		**5.5800e-003**	**5.5800e-003**		**5.5800e-003**	**5.5800e-003**	**0.0000**	**98.4654**	**98.4654**	**0.0319**	**0.0000**	**99.2615**

Mitigated Construction Off-Site

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

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.9500e-003	0.2243	0.0604	2.9000e-004	3.2600e-003	1.9000e-004	3.4500e-003	9.5000e-004	1.8000e-004	1.1300e-003	0.0000	28.0519	28.0519	2.6000e-003	0.0000	28.1170
Worker	0.0173	7.6300e-003	0.1009	1.5000e-004	0.0127	1.7000e-004	0.0129	3.4000e-003	1.6000e-004	3.5500e-003	0.0000	13.4125	13.4125	5.3000e-004	0.0000	13.4256
Total	**0.0232**	**0.2319**	**0.1613**	**4.4000e-004**	**0.0160**	**3.6000e-004**	**0.0163**	**4.3500e-003**	**3.4000e-004**	**4.6800e-003**	**0.0000**	**41.4644**	**41.4644**	**3.1300e-003**	**0.0000**	**41.5426**

3.7 Paving - 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	0.0126	0.1292	0.1465	2.3000e-004		6.7800e-003	6.7800e-003		6.2400e-003	6.2400e-003	0.0000	20.0235	20.0235	6.4800e-003	0.0000	20.1854
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0126**	**0.1292**	**0.1465**	**2.3000e-004**		**6.7800e-003**	**6.7800e-003**		**6.2400e-003**	**6.2400e-003**	**0.0000**	**20.0235**	**20.0235**	**6.4800e-003**	**0.0000**	**20.1854**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-004	8.0000e-005	1.0600e-003	0.0000	1.3000e-004	0.0000	1.4000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1414	0.1414	1.0000e-005	0.0000	0.1416

Total	**1.8000e-004**	**8.0000e-005**	**1.0600e-003**	**0.0000**	**1.3000e-004**	**0.0000**	**1.4000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1414**	**0.1414**	**1.0000e-005**	**0.0000**	**0.1416**

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	5.6100e-003	0.1130	0.1730	2.3000e-004		9.1000e-004	9.1000e-004		9.1000e-004	9.1000e-004	0.0000	20.0235	20.0235	6.4800e-003	0.0000	20.1854
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.6100e-003**	**0.1130**	**0.1730**	**2.3000e-004**		**9.1000e-004**	**9.1000e-004**		**9.1000e-004**	**9.1000e-004**	**0.0000**	**20.0235**	**20.0235**	**6.4800e-003**	**0.0000**	**20.1854**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-004	8.0000e-005	1.0600e-003	0.0000	1.3000e-004	0.0000	1.4000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1414	0.1414	1.0000e-005	0.0000	0.1416
Total	**1.8000e-004**	**8.0000e-005**	**1.0600e-003**	**0.0000**	**1.3000e-004**	**0.0000**	**1.4000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1414**	**0.1414**	**1.0000e-005**	**0.0000**	**0.1416**

3.8 Architectural Coating - 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	2.9890					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1900e-003	0.0153	0.0182	3.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576
Total	**2.9912**	**0.0153**	**0.0182**	**3.0000e-005**		**9.4000e-004**	**9.4000e-004**		**9.4000e-004**	**9.4000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.8000e-004**	**0.0000**	**2.5576**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.9000e-004	2.6000e-004	3.4300e-003	1.0000e-005	4.3000e-004	1.0000e-005	4.4000e-004	1.2000e-004	1.0000e-005	1.2000e-004	0.0000	0.4556	0.4556	2.0000e-005	0.0000	0.4561
Total	**5.9000e-004**	**2.6000e-004**	**3.4300e-003**	**1.0000e-005**	**4.3000e-004**	**1.0000e-005**	**4.4000e-004**	**1.2000e-004**	**1.0000e-005**	**1.2000e-004**	**0.0000**	**0.4556**	**0.4556**	**2.0000e-005**	**0.0000**	**0.4561**

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	2.9890					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	3.0000e-005		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.9890**	**0.0000**	**0.0000**	**3.0000e-005**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.9000e-004	2.6000e-004	3.4300e-003	1.0000e-005	4.3000e-004	1.0000e-005	4.4000e-004	1.2000e-004	1.0000e-005	1.2000e-004	0.0000	0.4556	0.4556	2.0000e-005	0.0000	0.4561
Total	**5.9000e-004**	**2.6000e-004**	**3.4300e-003**	**1.0000e-005**	**4.3000e-004**	**1.0000e-005**	**4.4000e-004**	**1.2000e-004**	**1.0000e-005**	**1.2000e-004**	**0.0000**	**0.4556**	**0.4556**	**2.0000e-005**	**0.0000**	**0.4561**

SCU Faculty Housing & Tech Center - Santa Clara County, Annual

SCU Faculty Housing & Tech Center - 2030

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	54.00	1000sqft	0.00	54,000.00	0
Enclosed Parking with Elevator	389.00	Space	0.00	155,600.00	0
Apartments Mid Rise	290.00	Dwelling Unit	2.99	380,000.00	829

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 2020 Rates = 290

Land Use - Applicant provided land uses

Construction Phase - Applicant approved Default construction schedule plus trenching

Off-road Equipment -

Off-road Equipment - Applicant approved construction Equip

Off-road Equipment - Applicant approved construction Equip

Off-road Equipment - Applicant approved construction Equip

Off-road Equipment - Applicant approved construction Equip

Off-road Equipment - Applicant approved construction Equip

Off-road Equipment - Applicant approved construction Equip, Added Trenching

Trips and VMT - Default vehicle trips

Demolition - Existing building demo = 44,100sf

Grading - Site Prep = 2,488cy import, 2,269cy export, Grading = 17,397cy export

Vehicle Trips - Apts w/ reductions = 4.14, 3.98, 3.65, Office w/ reductions = 20.00, 4.46, 1.90

Woodstoves - No wood, all gas

Energy Use -

Water And Wastewater - WTP treatment 100% aerobic

Energy Mitigation - SJCE 100% carbon-free base power by 2021

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	20.00
tblConstructionPhase	NumDays	220.00	230.00
tblConstructionPhase	NumDays	6.00	20.00
tblConstructionPhase	NumDays	10.00	20.00
tblConstructionPhase	NumDays	3.00	10.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	43.50	92.80
tblFireplaces	NumberWood	49.30	0.00
tblGrading	MaterialExported	0.00	17,397.00
tblGrading	MaterialExported	0.00	2,269.00
tblGrading	MaterialImported	0.00	2,488.00
tblLandUse	LandUseSquareFeet	290,000.00	380,000.00
tblLandUse	LotAcreage	1.24	0.00
tblLandUse	LotAcreage	3.50	0.00
tblLandUse	LotAcreage	7.63	2.99
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	6.00	7.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblTripsAndVMT	VendorTripNumber	65.00	56.00
tblTripsAndVMT	WorkerTripNumber	291.00	271.00
tblVehicleTrips	ST_TR	6.39	3.98
tblVehicleTrips	ST_TR	2.46	4.46
tblVehicleTrips	SU_TR	5.86	3.65
tblVehicleTrips	SU_TR	1.05	1.90
tblVehicleTrips	WD_TR	6.65	4.14
tblVehicleTrips	WD_TR	11.03	20.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00

tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	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	2.0697	0.0348	2.1559	1.8000e-004		0.0128	0.0128		0.0128	0.0128	0.0000	15.1104	15.1104	3.5900e-003	2.1000e-004	15.2635
Energy	0.0183	0.1588	0.0855	1.0000e-003		0.0126	0.0126		0.0126	0.0126	0.0000	584.9500	584.9500	0.0439	0.0117	589.5264
Mobile	0.2999	1.2959	3.4717	0.0150	1.7367	0.0100	1.7467	0.4648	9.3300e-003	0.4741	0.0000	1,379.7050	1,379.7050	0.0396	0.0000	1,380.6949
Waste						0.0000	0.0000		0.0000	0.0000	37.2732	0.0000	37.2732	2.2028	0.0000	92.3428
Water						0.0000	0.0000		0.0000	0.0000	10.0806	28.4725	38.5531	0.0375	0.0225	46.2000
Total	**2.3879**	**1.4895**	**5.7131**	**0.0162**	**1.7367**	**0.0354**	**1.7721**	**0.4648**	**0.0347**	**0.4995**	**47.3538**	**2,008.2379**	**2,055.5917**	**2.3274**	**0.0344**	**2,124.0275**

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	2.0697	0.0348	2.1559	1.8000e-004		0.0128	0.0128		0.0128	0.0128	0.0000	15.1104	15.1104	3.5900e-003	2.1000e-004	15.2635
Energy	0.0183	0.1588	0.0855	1.0000e-003		0.0126	0.0126		0.0126	0.0126	0.0000	180.8724	180.8724	3.4700e-003	3.3200e-003	181.9472
Mobile	0.2999	1.2959	3.4717	0.0150	1.7367	0.0100	1.7467	0.4648	9.3300e-003	0.4741	0.0000	1,379.7050	1,379.7050	0.0396	0.0000	1,380.6949
Waste						0.0000	0.0000		0.0000	0.0000	37.2732	0.0000	37.2732	2.2028	0.0000	92.3428
Water						0.0000	0.0000		0.0000	0.0000	10.0806	28.4725	38.5531	0.0375	0.0225	46.2000
Total	**2.3879**	**1.4895**	**5.7131**	**0.0162**	**1.7367**	**0.0354**	**1.7721**	**0.4648**	**0.0347**	**0.4995**	**47.3538**	**1,604.1602**	**1,651.5140**	**2.2870**	**0.0260**	**1,716.4484**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**20.12**	**19.66**	**1.74**	**24.30**	**19.19**

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	0.2999	1.2959	3.4717	0.0150	1.7367	0.0100	1.7467	0.4648	9.3300e-003	0.4741	0.0000	1,379.7050	1,379.7050	0.0396	0.0000	1,380.6949

Unmitigated	0.2999	1.2959	3.4717	0.0150	1.7367	0.0100	1.7467	0.4648	9.3300e-003	0.4741	0.0000	1,379.7050	1,379.7050	0.0396	0.0000	1,380.6949

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,200.60	1,154.20	1058.50	2,710,720	2,710,720
Enclosed Parking with Elevator	0.00	0.00	0.00		
General Office Building	1,080.00	240.84	102.60	1,960,772	1,960,772
Total	2,280.60	1,395.04	1,161.10	4,671,492	4,671,492

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	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
Enclosed 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
General Office Building	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

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	404.0776	404.0776	0.0404	8.3600e-003	407.5792
NaturalGas Mitigated	0.0183	0.1588	0.0855	1.0000e-003		0.0126	0.0126		0.0126	0.0126	0.0000	180.8724	180.8724	3.4700e-003	3.3200e-003	181.9472
NaturalGas Unmitigated	0.0183	0.1588	0.0855	1.0000e-003		0.0126	0.0126		0.0126	0.0126	0.0000	180.8724	180.8724	3.4700e-003	3.3200e-003	181.9472

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	2.50544e+006	0.0135	0.1155	0.0491	7.4000e-004		9.3300e-003	9.3300e-003		9.3300e-003	9.3300e-003	0.0000	133.6999	133.6999	2.5600e-003	2.4500e-003	134.4944
Enclosed 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
General Office Building	883980	4.7700e-003	0.0433	0.0364	2.6000e-004		3.2900e-003	3.2900e-003		3.2900e-003	3.2900e-003	0.0000	47.1725	47.1725	9.0000e-004	8.6000e-004	47.4529
Total		**0.0183**	**0.1588**	**0.0855**	**1.0000e-003**		**0.0126**	**0.0126**		**0.0126**	**0.0126**	**0.0000**	**180.8724**	**180.8724**	**3.4600e-003**	**3.3100e-003**	**181.9472**

Mitigated

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

Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	2.50544e+006	0.0135	0.1155	0.0491	7.4000e-004		9.3300e-003	9.3300e-003		9.3300e-003	9.3300e-003	0.0000	133.6999	133.6999	2.5600e-003	2.4500e-003	134.4944
Enclosed 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
General Office Building	883980	4.7700e-003	0.0433	0.0364	2.6000e-004		3.2900e-003	3.2900e-003		3.2900e-003	3.2900e-003	0.0000	47.1725	47.1725	9.0000e-004	8.6000e-004	47.4529
Total		**0.0183**	**0.1588**	**0.0855**	**1.0000e-003**		**0.0126**	**0.0126**		**0.0126**	**0.0126**	**0.0000**	**180.8724**	**180.8724**	**3.4600e-003**	**3.3100e-003**	**181.9472**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.19722e+006	157.4847	0.0158	3.2600e-003	158.8493
Enclosed Parking with Elevator	911816	119.9419	0.0120	2.4800e-003	120.9813
General Office Building	962820	126.6511	0.0127	2.6200e-003	127.7486
Total		**404.0776**	**0.0404**	**8.3600e-003**	**407.5792**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000

General Office Building	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	2.0697	0.0348	2.1559	1.8000e-004		0.0128	0.0128		0.0128	0.0128	0.0000	15.1104	15.1104	3.5900e-003	2.1000e-004	15.2635
Unmitigated	2.0697	0.0348	2.1559	1.8000e-004		0.0128	0.0128		0.0128	0.0128	0.0000	15.1104	15.1104	3.5900e-003	2.1000e-004	15.2635

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	0.2989					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.7051					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.1700e-003	0.0100	4.2600e-003	6.0000e-005		8.1000e-004	8.1000e-004		8.1000e-004	8.1000e-004	0.0000	11.5851	11.5851	2.2000e-004	2.1000e-004	11.6539

Landscaping	0.0646	0.0248	2.1516	1.1000e-004		0.0120	0.0120		0.0120	0.0120	0.0000	3.5253	3.5253	3.3700e-003	0.0000	3.6096
Total	**2.0697**	**0.0348**	**2.1559**	**1.7000e-004**		**0.0128**	**0.0128**		**0.0128**	**0.0128**	**0.0000**	**15.1104**	**15.1104**	**3.5900e-003**	**2.1000e-004**	**15.2635**

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	0.2989					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.7051					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.1700e-003	0.0100	4.2600e-003	6.0000e-005		8.1000e-004	8.1000e-004		8.1000e-004	8.1000e-004	0.0000	11.5851	11.5851	2.2000e-004	2.1000e-004	11.6539
Landscaping	0.0646	0.0248	2.1516	1.1000e-004		0.0120	0.0120		0.0120	0.0120	0.0000	3.5253	3.5253	3.3700e-003	0.0000	3.6096
Total	**2.0697**	**0.0348**	**2.1559**	**1.7000e-004**		**0.0128**	**0.0128**		**0.0128**	**0.0128**	**0.0000**	**15.1104**	**15.1104**	**3.5900e-003**	**2.1000e-004**	**15.2635**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	38.5531	0.0375	0.0225	46.2000
Unmitigated	38.5531	0.0375	0.0225	46.2000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	18.8947 / 11.9119	25.6178	0.0249	0.0149	30.6893
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	9.59762 / 5.88241	12.9352	0.0126	7.5800e-003	15.5106
Total		**38.5531**	**0.0375**	**0.0225**	**46.2000**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	18.8947 / 11.9119	25.6178	0.0249	0.0149	30.6893
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	9.59762 / 5.88241	12.9352	0.0126	7.5800e-003	15.5106
Total		**38.5531**	**0.0375**	**0.0225**	**46.2000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	37.2732	2.2028	0.0000	92.3428
Unmitigated	37.2732	2.2028	0.0000	92.3428

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	133.4	27.0790	1.6003	0.0000	67.0871
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	50.22	10.1942	0.6025	0.0000	25.2557
Total		**37.2732**	**2.2028**	**0.0000**	**92.3428**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	133.4	27.0790	1.6003	0.0000	67.0871
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
General Office Building	50.22	10.1942	0.6025	0.0000	25.2557
Total		**37.2732**	**2.2028**	**0.0000**	**92.3428**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment 3: Screening Community Risk Calculations

State Route 82 on El Camino Real Highway Screening at 6ft

Link 319 (6ft elevation)

	PM2.5	Risk	Chron.HI	Acute.HI
10 ft W	0.242	19.763	0.027	0.023
25 ft W	0.193	15.894	0.021	0.019
50 ft W	0.145	11.998	0.016	0.016
75 ft W	0.116	9.672	0.013	0.013
100 ft W	0.097	8.127	0.011	0.010
200 ft W	0.059	5.068	0.006	0.006
300 ft W	0.044	3.775	0.005	0.004
400 ft W	0.035	3.061	0.004	0.004
500 ft W	0.030	2.591	0.003	0.003
750 ft W	0.021	1.859	0.002	0.002
1000 ft W	0.016	1.408	0.001	0.002
10 ft E	0.254	22.947	0.029	0.025
25 ft E	0.207	18.883	0.024	0.021
50 ft E	0.162	14.957	0.019	0.016
75 ft E	0.135	12.574	0.015	0.014
100 ft E	0.116	10.925	0.013	0.012
200 ft E	0.076	7.337	0.009	0.010
300 ft E	0.057	5.535	0.006	0.008
400 ft E	0.045	4.446	0.005	0.007
500 ft E	0.037	3.697	0.004	0.009
750 ft E	0.024	2.507	0.003	0.006
1000 ft E	0.017	1.823	0.002	0.005

Bay Area Air Quality Management District

Risk & Hazard Stationary Source Inquiry Form

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

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

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

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

Table A: Requester Contact Information

Date of Request	**4/15/2019**
Contact Name	Casey Divine
Affiliation	Illingworth & Rodkin, Inc.
Phone	707-794-0400 x103
Email	cdivine@illingworthrodkin.com
Project Name	Santa Clara Uni Housing
Address	1200 Campbell Avenue
City	San Jose
County	Santa Clara
Type (residential, commercial, mixed use, industrial, etc.)	MU
Project Size (# of units or building square feet)	290du, 26ksf office
Comments:	

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

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

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

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

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

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

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

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

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

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

Table B: Google Earth data

Distance from Receptor (feet) or MEI[1]	Facility Name	Address	Plant No.	Cancer Risk[2]	Hazard Risk[2]	$PM_{2.5}$[2]	Source No.[3]	Type of Source[4]	Fuel Code[5]	Status/Comments
10	Santa Clara University	500 El Camino Real	15397-24	0.54	0.00	0.00	24	Generator		Emissions data attached. Use Health Risk Calculator

Footnotes:

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

Date last updated:
03/13/2018

PROJECT SITE

Distance Adjustment Multiplier	Adjusted Cancer Risk Estimate	Adjusted Hazard Risk	Adjusted PM2.5
1.00	0.5	0.0008	0.001

Construction MEI

Distance from Receptor (feet) or MEI[1]	Distance Adjustment Multiplier	Adjusted Cancer Risk Estimate	Adjusted Hazard Risk	Adjusted PM2.5
330	0.22	0.1	0.0002	0.0002

Attachment 4: Rail Line Emissions, Modeling Information, and Health Risk Calculations

Santa Clara University Housing, Santa Clara, CA
DPM Modeling - Rail Line Information and DPM and PM2.5 Emission Rates
Diesel Powered Caltrains, Other Passenger Trains, and Freight Trains

Year	Description	Model No. Lines	Link Width (ft)	Link Width (m)	Link Length (ft)	Link Length (miles)	Link Length (m)	Release Height (m)	No. Trains per Day	Train Travel Speed (mph)	DPM Emission Rates: Average Daily Emission Rate (g/mi/day)	DPM Emission Rates: Average Daily Emission Rate (g/day)	DPM Emission Rates: Link Emission Rate (g/s)	DPM Emission Rates: Link Emission Rate (lb/hr)
2022-2025	Caltrain Passenger Trains	1	12	3.7	2,434	0.46	742	5.0	19	40	44.4	20.5	2.37E-04	1.88E-03
	Amtrak Passenger trains	1	12	3.7	2,434	0.46	742	5.0	10	40	21.1	9.7	1.13E-04	8.95E-04
	Freight Trains	1	12	3.7	2,434	0.46	742	5.0	10	40	41.8	19.3	2.23E-04	1.77E-03
	Total	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**38**	**-**	**107.4**	**49.5**	**5.73E-04**	**4.55E-03**
2026-2035	Caltrain Passenger Trains	1	12	3.7	2,434	0.46	742	5.0	3	40	3.4	1.6	1.82E-05	1.44E-04
	Amtrak Passenger trains	1	12	3.7	2,434	0.46	742	5.0	10	40	10.7	4.9	5.71E-05	4.53E-04
	Freight Trains	1	12	3.7	2,434	0.46	742	5.0	10	40	24.2	11.1	1.29E-04	1.02E-03
	Total	**1**	**12**	**3.7**	**2,434**	**0.46**	**742**	**5.0**	**23**	**-**	**38.3**	**17.6**	**2.04E-04**	**1.62E-03**
2036-2051	Caltrain Passenger Trains	1	12	3.7	2,434	0.46	742	5.0	1	40	0.7	0.3	3.72E-06	2.95E-05
	Amtrak Passenger trains	1	12	3.7	2,434	0.46	742	5.0	10	40	4.38	2.0	2.33E-05	1.85E-04
	Freight Trains	1	12	3.7	2,434	0.46	742	5.0	10	40	10.2	4.7	5.42E-05	4.30E-04
	Total	**1**	**12**	**3.7**	**2,434**	**0.46**	**742**	**5.0**	**21**	**-**	**15.2**	**7.0**	**8.13E-05**	**6.45E-04**

Notes: Emission based on Emission Factors for Locomotives, USEPA 2009 (EPA-420-F-09-025)
Average emissions calculated for periods 2022-2025, 2026-2035, and 2036-2051.
Fuel correction factors from Offroad Modeling Change Technical memo, Changes to the Locomotive Inventory, CARB July 2006.
PM2.5 calculated as 92% of PM emissions (CARB CEIDERS PM2.5 fractions)
Passenger trains assumed to operate for 24 hours per day
Freight trains assumed to operate for 24 hours per day

Number of Diesel Trains in Service			
Caltrain	**2022 - 2025**	**2026 - 2035**	**2036 - 2051**
Passenger trains - weekday =	24	4	2
Passenger trains - weekend =	4	0	0
Passenger trains - Sat only =	4	0	0
Total Trains =	32	4	2
Annual average daily trains =	19	3	1
Locomotive horsepower =	3467	3467	3467
Locomotive engine load =	0.5	0.5	0.5
Amtrak Capitol Corridor & Coast Starlight	**2022 - 2025**	**2026 - 2035**	**2036 - 2051**
Passenger trains - weekday =	10	10	10
Passenger trains - weekend =	9	9	9
Passenger trains - Sat only =	0	0	0
Total Trains =	19	19	19
Annual average daily trains =	10	10	10
Locomotive horsepower =	3200	3200	3200
Locomotives per train =	1	1	1
Locomotive engine load =	0.5	0.5	0.5
Freight			
Freight trains per day =	10	10	10
Locomotive horsepower =	2300	2300	2300
Locomotives per train =	2	2	2
Total horsepower =	4600	4600	4600
Locomotive engine load =	0.5	0.5	0.5

Locomotive DPM Emission Factors (g/hp-hr)

Train Type	2022-2025	2026-2035	2036-2051
Passenger	0.077	0.0389	0.016
Freight	0.087	0.0500	0.021

* average emissions for period.

PM2.5 to PM ratio = 0.92
DPM to PM ratio = 1

	CARB Fuel Adj Factor 2010	2011+
Passenger	0.717	0.709
Freight	0.851	0.840

Santa Clara University Housing, Santa Clara, CA - On-Site Impacts
3rd Floor Receptors - Rail Line DPM & PM2.5 Concentrations
AERMOD Risk Modeling Parameters and Maximum Concentrations
Caltrain Electrification and Diesel-Powered Amtrak and Freight Trains

Receptor Information	3rd Floor Receptors
Number of Receptors	395
Receptor Height =	9.1 meters
Receptor distances =	7 meter (23 feet) grid spacing in residential area

Meteorological Conditions	
BAAQMD San Jose Arpt Hourly Data	2006-2010
Land Use Classification	urban
Wind speed =	variable
Wind direction =	variable

MEI Maximum Concentrations - Receptor Height = 9.1 m

Meteorological Data Years	Period Average DPM Concentration ($\mu g/m^3$) 2022-2025	2026-2035	2036-2051
2006-2010	0.01584	0.0055	0.0022
Meteorological Data Years	**Period Average PM2.5 Concentration ($\mu g/m^3$) 2022-2025**	**2026-2035**	**2036-2051**
2006-2010	0.0146	0.0051	0.0020

Santa Clara University Housing, Santa Clara, CA - On-Site Impacts
4th Floor Receptors - Rail Line DPM & PM2.5 Concentrations
AERMOD Risk Modeling Parameters and Maximum Concentrations
Caltrain Electrification and Diesel-Powered Amtrak and Freight Trains

Receptor Information	4th Floor Receptors
Number of Receptors	395
Receptor Height =	12.2 meters
Receptor distances =	7 meter (23 feet) grid spacing in residential area

Meteorological Conditions	
BAAQMD San Jose Arpt Hourly Data	2006-2010
Land Use Classification	urban
Wind speed =	variable
Wind direction =	variable

MEI Maximum Concentrations - Receptor Height = 12.2 m

Meteorological Data Years	Period Average DPM Concentration ($\mu g/m^3$) 2022-2025	2026-2035	2036-2051
2006-2010	0.01040	0.0037	0.0022
Meteorological Data Years	**Period Average PM2.5 Concentration ($\mu g/m^3$) 2022-2025**	**2026-2035**	**2036-2051**
2006-2010	0.0096	0.0034	0.0020

Santa Clara University Housing, Santa Clara, CA - On-Site Impacts
3rd Floor Receptors (9.1 meter receptor heights)
Maximum Cancer Risk at Project Site
Caltrain Electrification and Diesel-Powered Amtrak and Freight Trains

Cancer Risk Calculation Method

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

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

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

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

Values

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

TAC	CPF
DPM	1.10E+00

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

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

Rail Locomotive Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Year	Exposure Duration (years)	Age	Age Sensitivity Factor	DPM Annual Conc (ug/m3)	DPM Cancer Risk (per million)
0	2022	0.25	-0.25 - 0*	10	0.0158	0.215
1	2022	1	1	10	0.0158	2.602
2	2023	1	2	10	0.0158	2.602
3	2024	1	3	3	0.0158	0.410
4	2025	1	4	3	0.0158	0.410
5	2026	1	5	3	0.0055	0.143
6	2027	1	6	3	0.0055	0.143
7	2028	1	7	3	0.0055	0.143
8	2029	1	8	3	0.0055	0.143
9	2030	1	9	3	0.0055	0.143
10	2031	1	10	3	0.0055	0.143
11	2032	1	11	3	0.0055	0.143
12	2033	1	12	3	0.0055	0.143
13	2034	1	13	3	0.0055	0.143
14	2035	1	14	3	0.0055	0.143
15	2036	1	15	3	0.0022	0.057
16	2037	1	16	3	0.0022	0.057
17	2038	1	17	1	0.0022	0.006
18	2039	1	18	1	0.0022	0.006
19	2040	1	19	1	0.0022	0.006
20	2041	1	20	1	0.0022	0.006
21	2042	1	21	1	0.0022	0.006
22	2043	1	22	1	0.0022	0.006
23	2044	1	23	1	0.0022	0.006
24	2045	1	24	1	0.0022	0.006
25	2046	1	25	1	0.0022	0.006
26	2047	1	26	1	0.0022	0.006
27	2048	1	27	1	0.0022	0.006
28	2049	1	28	1	0.0022	0.006
29	2050	1	29	1	0.0022	0.006
30	2051	1	30	1	0.0022	0.006
Total Increased Cancer Risk						**7.9**

* Third trimester of pregnancy

Santa Clara University Housing, Santa Clara, CA - On-Site Impacts
4th Floor Receptors (12.2 meter receptor heights)
Maximum Cancer Risk at Project Site
Caltrain Electrification and Diesel-Powered Amtrak and Freight Trains

Cancer Risk Calculation Method

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

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

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

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

Values

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

TAC	CPF
DPM	1.10E+00

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

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

Rail Locomotive Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Year	Exposure Duration (years)	Age	Age Sensitivity Factor	DPM Annual Conc (ug/m3)	DPM Cancer Risk (per million)
0	2022	0.25	-0.25 - 0*	10	0.0104	0.141
1	2022	1	1	10	0.0104	1.708
2	2023	1	2	10	0.0104	1.708
3	2024	1	3	3	0.0104	0.269
4	2025	1	4	3	0.0104	0.269
5	2026	1	5	3	0.0037	0.094
6	2027	1	6	3	0.0037	0.094
7	2028	1	7	3	0.0037	0.094
8	2029	1	8	3	0.0037	0.094
9	2030	1	9	3	0.0037	0.094
10	2031	1	10	3	0.0037	0.094
11	2032	1	11	3	0.0037	0.094
12	2033	1	12	3	0.0037	0.094
13	2034	1	13	3	0.0037	0.094
14	2035	1	14	3	0.0037	0.094
15	2036	1	15	3	0.0022	0.057
16	2037	1	16	3	0.0022	0.057
17	2038	1	17	1	0.0022	0.006
18	2039	1	18	1	0.0022	0.006
19	2040	1	19	1	0.0022	0.006
20	2041	1	20	1	0.0022	0.006
21	2042	1	21	1	0.0022	0.006
22	2043	1	22	1	0.0022	0.006
23	2044	1	23	1	0.0022	0.006
24	2045	1	24	1	0.0022	0.006
25	2046	1	25	1	0.0022	0.006
26	2047	1	26	1	0.0022	0.006
27	2048	1	27	1	0.0022	0.006
28	2049	1	28	1	0.0022	0.006
29	2050	1	29	1	0.0022	0.006
30	2051	1	30	1	0.0022	0.006
Total Increased Cancer Risk						**5.2**

* Third trimester of pregnancy

Construction MEI Floor Receptor - Rail Line DPM & PM2.5 Concentration
AERMOD Risk Modeling Parameters and Maximum Concentrations
Caltrain Electrification and Diesel-Powered Amtrak and Freight Trains

Receptor Information	Construction MEI Receptor
Number of Receptors	1
Receptor Height =	1.5 meters
Receptor distances =	none
Meteorological Conditions	
BAAQMD San Jose Arpt Hourly Data	2006-2010
Land Use Classification	urban
Wind speed =	variable
Wind direction =	variable

Construction MEI Concentrations - Receptor Height = 1.5 m

Meteorological Data Years	Period Average DPM Concentration ($\mu g/m^3$)		
	2022-2025	**2026-2035**	**2036-2051**
2006-2010	0.01301	0.0046	0.0018
Meteorological Data Years	**Period Average PM2.5 Concentration ($\mu g/m^3$)**		
	2022-2025	**2026-2035**	**2036-2051**
2006-2010	0.0120	0.0042	0.0017

Santa Clara University Housing, Santa Clara, CA - On-Site Impacts
Construction MIE Receptor (1.5 meter receptor heights)
Maximum Cancer Risk at Project Site
Caltrain Electrification and Diesel-Powered Amtrak and Freight Trains

Cancer Risk Calculation Method

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

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

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

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

Values

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

TAC	CPF
DPM	1.10E+00

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

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

Rail Locomotive Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Year	Exposure Duration (years)	Age	Age Sensitivity Factor	DPM Annual Conc (ug/m3)	DPM Cancer Risk (per million)
0	2022	0.25	-0.25 - 0*	10	0.0130	0.177
1	2022	1	1	10	0.0130	2.137
2	2023	1	2	10	0.0130	2.137
3	2024	1	3	3	0.0130	0.336
4	2025	1	4	3	0.0130	0.336
5	2026	1	5	3	0.0046	0.118
6	2027	1	6	3	0.0046	0.118
7	2028	1	7	3	0.0046	0.118
8	2029	1	8	3	0.0046	0.118
9	2030	1	9	3	0.0046	0.118
10	2031	1	10	3	0.0046	0.118
11	2032	1	11	3	0.0046	0.118
12	2033	1	12	3	0.0046	0.118
13	2034	1	13	3	0.0046	0.118
14	2035	1	14	3	0.0046	0.118
15	2036	1	15	3	0.0018	0.047
16	2037	1	16	3	0.0018	0.047
17	2038	1	17	1	0.0018	0.005
18	2039	1	18	1	0.0018	0.005
19	2040	1	19	1	0.0018	0.005
20	2041	1	20	1	0.0018	0.005
21	2042	1	21	1	0.0018	0.005
22	2043	1	22	1	0.0018	0.005
23	2044	1	23	1	0.0018	0.005
24	2045	1	24	1	0.0018	0.005
25	2046	1	25	1	0.0018	0.005
26	2047	1	26	1	0.0018	0.005
27	2048	1	27	1	0.0018	0.005
28	2049	1	28	1	0.0018	0.005
29	2050	1	29	1	0.0018	0.005
30	2051	1	30	1	0.0018	0.005
Total Increased Cancer Risk						**6.5**

* Third trimester of pregnancy

Attachment 5: Construction Health Risk Calculations

Santa Clara University Housing, San Jose, CA

DPM Emissions and Modeling Emission Rates - Unmitigated

Emissions Model Year	Activity	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2020	Construction	0.0907	DPM	181.4	0.04970	6.26E-03	12,561	**4.99E-07**
2021	Construction	0.0586	DPM	117.2	0.03211	4.05E-03	12,561	**3.22E-07**
Total		***0.1493***		***298.6***	***0.0818***	***0.0103***		

Operation Hours

hr/day =	10	(7am - 5pm)
days/yr =	365	
hours/year =	3650	

Santa Clara University Housing, San Jose, CA

PM2.5 Fugitive Dust Emissions for Modeling - Unmitigated

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2020	Construction	FUG	0.0908	181.6	0.04975	6.27E-03	12,561	**4.99E-07**
2021	Construction	FUG	0.0045	9.0	0.00246	3.10E-04	12,561	**2.47E-08**
Total			***0.0953***	***190.6***	***0.0522***	***0.0066***		

Operation Hours

hr/day =	10	(7am - 5pm)
days/yr =	365	
hours/year =	3650	

DPM Construction Emissions and Modeling Emission Rates - With Mitigation

Emissions Model Year	Activity	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2020	Construction	0.0082	DPM	16.5	0.00451	5.68E-04	12,561	**4.52E-08**
2021	Construction	0.0069	DPM	13.7	0.00376	4.74E-04	12,561	**3.77E-08**
Total		***0.0151***		***30.2***	***0.0083***	***0.0010***		

Operation Hours

hr/day =	10	(7am - 5pm)
days/yr =	365	
hours/year =	3650	

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

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2020	Construction	FUG	0.0236	47.2	0.01293	1.63E-03	12,561	**1.30E-07**
2021	Construction	FUG	0.0045	9.0	0.00246	3.10E-04	12,561	**2.47E-08**
Total			***0.0281***	***56.2***	***0.0154***	***0.0019***		

Operation Hours

hr/day =	10	(7am - 5pm)
days/yr =	365	
hours/year =	3650	

Santa Clara University Housing, San Jose, CA
Construction Health Impacts Summary

Maximum Impacts at Construction MEI Location - Unmitigated

Emissions Year	Maximum Concentrations: Exhaust PM10/DPM ($\mu g/m^3$)	Maximum Concentrations: Fugitive PM2.5 ($\mu g/m^3$)	Cancer Risk (per million): Child	Cancer Risk (per million): Adult	Hazard Index (-)	Maximum Annual PM2.5 Concentration ($\mu g/m^3$)
2020	0.2801	0.6102	49.81	0.80	0.06	0.89
2021	0.1807	0.0302	29.68	0.52	0.04	0.21
Total	-	-	**79.5**	**1.3**	-	-
Maximum	0.2801	0.6102	**-**	**-**	**0.06**	**0.89**

Maximum Impacts at Construction MEI Location - With Mitigation

Emissions Year	Maximum Concentrations: Exhaust PM10/DPM ($\mu g/m^3$)	Maximum Concentrations: Fugitive PM2.5 ($\mu g/m^3$)	Cancer Risk (per million): Child	Cancer Risk (per million): Adult	Hazard Index (-)	Maximum Annual PM2.5 Concentration ($\mu g/m^3$)
2020	0.0254	0.1590	4.51	0.07	0.01	0.18
2021	0.0212	0.0302	3.48	0.06	0.00	0.05
Total	-	-	**8.0**	**0.1**	-	-
Maximum	0.0254	0.1590	**-**	**-**	**0.01**	**0.18**

Santa Clara University Housing, S: - Unmitigated Emissions
Maximum DPM Cancer Risk Calculations From Construction
Impacts at Off-Site Receptors-1.5 meter receptor height

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

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

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

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

Values

	Infant/Child				Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 9**	**2 - 16**	**16 - 30**
Parameter					
ASF =	10	10	3	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	631	572	261
A =	1	1	1	1	1
EF =	350	350	350	350	350
AT =	70	70	70	70	70
FAH =	1.00	1.00	1.00	1.00	0.73

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

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Informatio			Infant/Child	Adult - Exposure Information			Adult		
							Modeled					
Exposure	**Exposure Duration**		**DPM Conc (ug/m3)**		**Age Sensitivity**	**Cancer Risk**	**DPM Conc (ug/m3)**		**Age Sensitivity**	**Cancer Risk**	**Fugitive**	**Total**
Year	**(years)**	**Age**	**Year**	**Annual**	**Factor**	**(per million)**	**Year**	**Annual**	**Factor**	**(per million)**	**PM2.5**	**PM2.5**
0	0.25	-0.25 - 0*	2020	0.2801	10	3.81	2020	0.2801	-	-		
1	1	0 - 1	2020	0.2801	10	46.00	2020	0.2801	1	0.80	0.6102	0.890
2	1	1 - 2	2021	0.1807	10	29.68	2021	0.1807	1	0.52	0.0302	0.211
3	1	2 - 3		0.0000	3	0.00		0.0000	1	0.00		
4	1	3 - 4		0.0000	3	0.00		0.0000	1	0.00		
5	1	4 - 5		0.0000	3	0.00		0.0000	1	0.00		
6	1	5 - 6		0.0000	3	0.00		0.0000	1	0.00		
7	1	6 - 7		0.0000	3	0.00		0.0000	1	0.00		
8	1	7 - 8		0.0000	3	0.00		0.0000	1	0.00		
9	1	8 - 9		0.0000	3	0.00		0.0000	1	0.00		
10	1	9 - 10		0.0000	3	0.00		0.0000	1	0.00		
11	1	10 - 11		0.0000	3	0.00		0.0000	1	0.00		
12	1	11 - 12		0.0000	3	0.00		0.0000	1	0.00		
13	1	12 - 13		0.0000	3	0.00		0.0000	1	0.00		
14	1	13 - 14		0.0000	3	0.00		0.0000	1	0.00		
15	1	14 - 15		0.0000	3	0.00		0.0000	1	0.00		
16	1	15 - 16		0.0000	3	0.00		0.0000	1	0.00		
17	1	16-17		0.0000	1	0.00		0.0000	1	0.00		
18	1	17-18		0.0000	1	0.00		0.0000	1	0.00		
19	1	18-19		0.0000	1	0.00		0.0000	1	0.00		
20	1	19-20		0.0000	1	0.00		0.0000	1	0.00		
21	1	20-21		0.0000	1	0.00		0.0000	1	0.00		
22	1	21-22		0.0000	1	0.00		0.0000	1	0.00		
23	1	22-23		0.0000	1	0.00		0.0000	1	0.00		
24	1	23-24		0.0000	1	0.00		0.0000	1	0.00		
25	1	24-25		0.0000	1	0.00		0.0000	1	0.00		
26	1	25-26		0.0000	1	0.00		0.0000	1	0.00		
27	1	26-27		0.0000	1	0.00		0.0000	1	0.00		
28	1	27-28		0.0000	1	0.00		0.0000	1	0.00		
29	1	28-29		0.0000	1	0.00		0.0000	1	0.00		
30	1	29-30		0.0000	1	0.00		0.0000	1	0.00		
Total Increased Cancer Risk						**79.5**				**1.32**		

* Third trimester of pregnancy

Santa Clara University Housing, S: - Unmitigated Emissions
Maximum DPM Cancer Risk Calculations From Construction
Impacts at Off-Site Receptors-4.5 meter

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

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

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

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

Values

	Infant/Child				Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 9**	**2 - 16**	**16 - 30**
Parameter					
ASF =	10	10	3	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	631	572	261
A =	1	1	1	1	1
EF =	350	350	350	350	350
AT =	70	70	70	70	70
FAH =	1.00	1.00	1.00	1.00	0.73

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

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Information			Infant/Child	Adult - Exposure Information			Adult		
							Modeled					
Exposure	Exposure		DPM Conc (ug/m3)		Age Sensitivity	Cancer Risk	DPM Conc (ug/m3)		Age Sensitivity	Cancer Risk	Fugitive	Total
Year	Duration (years)	Age	Year	Annual	Factor	(per million)	Year	Annual	Factor	(per million)	PM2.5	PM2.5
0	0.25	-0.25 - 0*	2020	0.1243	10	1.69	2020	0.1243	-	-		
1	1	0 - 1	2020	0.1243	10	20.41	2020	0.1243	1	0.36	0.1505	0.275
2	1	1 - 2	2021	0.0802	10	13.17	2021	0.0802	1	0.23	0.0075	0.088
3	1	2 - 3		0.0000	3	0.00		0.0000	1	0.00		
4	1	3 - 4		0.0000	3	0.00		0.0000	1	0.00		
5	1	4 - 5		0.0000	3	0.00		0.0000	1	0.00		
6	1	5 - 6		0.0000	3	0.00		0.0000	1	0.00		
7	1	6 - 7		0.0000	3	0.00		0.0000	1	0.00		
8	1	7 - 8		0.0000	3	0.00		0.0000	1	0.00		
9	1	8 - 9		0.0000	3	0.00		0.0000	1	0.00		
10	1	9 - 10		0.0000	3	0.00		0.0000	1	0.00		
11	1	10 - 11		0.0000	3	0.00		0.0000	1	0.00		
12	1	11 - 12		0.0000	3	0.00		0.0000	1	0.00		
13	1	12 - 13		0.0000	3	0.00		0.0000	1	0.00		
14	1	13 - 14		0.0000	3	0.00		0.0000	1	0.00		
15	1	14 - 15		0.0000	3	0.00		0.0000	1	0.00		
16	1	15 - 16		0.0000	3	0.00		0.0000	1	0.00		
17	1	16-17		0.0000	1	0.00		0.0000	1	0.00		
18	1	17-18		0.0000	1	0.00		0.0000	1	0.00		
19	1	18-19		0.0000	1	0.00		0.0000	1	0.00		
20	1	19-20		0.0000	1	0.00		0.0000	1	0.00		
21	1	20-21		0.0000	1	0.00		0.0000	1	0.00		
22	1	21-22		0.0000	1	0.00		0.0000	1	0.00		
23	1	22-23		0.0000	1	0.00		0.0000	1	0.00		
24	1	23-24		0.0000	1	0.00		0.0000	1	0.00		
25	1	24-25		0.0000	1	0.00		0.0000	1	0.00		
26	1	25-26		0.0000	1	0.00		0.0000	1	0.00		
27	1	26-27		0.0000	1	0.00		0.0000	1	0.00		
28	1	27-28		0.0000	1	0.00		0.0000	1	0.00		
29	1	28-29		0.0000	1	0.00		0.0000	1	0.00		
30	1	29-30		0.0000	1	0.00		0.0000	1	0.00		
Total Increased Cancer Risk						**35.3**				**0.59**		

* Third trimester of pregnancy

Santa Clara University Housing, S: - Mitigated Emissions
Maximum DPM Cancer Risk Calculations From Construction
Impacts at Off-Site Receptors-1.5 meter

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

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

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

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

Values

	Infant/Child				Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 9**	**2 - 16**	**16 - 30**
Parameter					
ASF =	10	10	3	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	631	572	261
A =	1	1	1	1	1
EF =	350	350	350	350	350
AT =	70	70	70	70	70
FAH =	1.00	1.00	1.00	1.00	0.73

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

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Information			Infant/Child	Adult - Exposure Information			Adult		
							Modeled					
Exposure	Exposure		DPM Conc (ug/m3)		Age Sensitivity	Cancer Risk	DPM Conc (ug/m3)		Age Sensitivity	Cancer Risk	Fugitive	Total
Year	Duration (years)	Age	Year	Annual	Factor	(per million)	Year	Annual	Factor	(per million)	PM2.5	PM2.5
0	0.25	-0.25 - 0*	2020	0	10	0.35	2020	0.0254	-	-		
1	1	0 - 1	2020	0	10	4.17	2020	0.0254	1	0.07	0.1590	0.184
2	1	1 - 2	2021	0	10	3.48	2021	0.0212	1	0.06	0.0302	0.051
3	1	2 - 3		0.0000	3	0.00		0.0000	1	0.00		
4	1	3 - 4		0.0000	3	0.00		0.0000	1	0.00		
5	1	4 - 5		0.0000	3	0.00		0.0000	1	0.00		
6	1	5 - 6		0.0000	3	0.00		0.0000	1	0.00		
7	1	6 - 7		0.0000	3	0.00		0.0000	1	0.00		
8	1	7 - 8		0.0000	3	0.00		0.0000	1	0.00		
9	1	8 - 9		0.0000	3	0.00		0.0000	1	0.00		
10	1	9 - 10		0.0000	3	0.00		0.0000	1	0.00		
11	1	10 - 11		0.0000	3	0.00		0.0000	1	0.00		
12	1	11 - 12		0.0000	3	0.00		0.0000	1	0.00		
13	1	12 - 13		0.0000	3	0.00		0.0000	1	0.00		
14	1	13 - 14		0.0000	3	0.00		0.0000	1	0.00		
15	1	14 - 15		0.0000	3	0.00		0.0000	1	0.00		
16	1	15 - 16		0.0000	3	0.00		0.0000	1	0.00		
17	1	16-17		0.0000	1	0.00		0.0000	1	0.00		
18	1	17-18		0.0000	1	0.00		0.0000	1	0.00		
19	1	18-19		0.0000	1	0.00		0.0000	1	0.00		
20	1	19-20		0.0000	1	0.00		0.0000	1	0.00		
21	1	20-21		0.0000	1	0.00		0.0000	1	0.00		
22	1	21-22		0.0000	1	0.00		0.0000	1	0.00		
23	1	22-23		0.0000	1	0.00		0.0000	1	0.00		
24	1	23-24		0.0000	1	0.00		0.0000	1	0.00		
25	1	24-25		0.0000	1	0.00		0.0000	1	0.00		
26	1	25-26		0.0000	1	0.00		0.0000	1	0.00		
27	1	26-27		0.0000	1	0.00		0.0000	1	0.00		
28	1	27-28		0.0000	1	0.00		0.0000	1	0.00		
29	1	28-29		0.0000	1	0.00		0.0000	1	0.00		
30	1	29-30		0.0000	1	0.00		0.0000	1	0.00		
Total Increased Cancer Risk						**8.0**				**0.13**		

* Third trimester of pregnancy