APPENDIX A

Air Quality & Greenhouse Gas Assessment

4350 EL CAMINO REAL AIR QUALITY & GREENHOUSE GAS ASSESSMENT

Los Altos, 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 residential project located at 4350 El Camino Real in Los Altos, California. The air quality impacts and GHG emissions from this project would be associated with the demolition of the existing uses at the site, the 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 proposes to demolish the existing gasoline service station buildings, pump islands, asphalt paving and landscaping, remove the underground fuel and oil storage tanks, and construct a new five-story residential building with two below-ground parking levels. The new building will contain 45 residential units, including nine one-bedroom, 32 two-bedroom, and four three-bedroom units. The one-bedroom units will range in size from 600 to 1,000 square feet, the two-bedroom units will range from 1,105 to 1,450 square feet, and the three-bedroom units will range from 1,400 to 1,780 square feet.

Parking is provided in a two-level below-ground garage that contains 39 vehicle spaces on the upper level and 45 vehicle spaces on the lower level for a total of 84 spaces. An enclosed bicycle parking area is also contained on the lower level. Vehicle access to and from the garage is via a single driveway on El Camino Real.

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.

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

Particulate matter is another problematic air pollutant of the Bay Area. Particulate matter is assessed and measured in terms of respirable particulate matter or particles that have a diameter of 10 micrometers or less (PM_{10}) and fine particulate matter where particles have a diameter of 2.5 micrometers or less ($PM_{2.5}$). Elevated concentrations of PM_{10} and $PM_{2.5}$ are the result of both region-wide (or cumulative) emissions and localized emissions. High particulate matter levels aggravate respiratory and cardiovascular diseases, reduce lung function, increase mortality (e.g., lung cancer), and result in reduced lung function growth in children.

Toxic Air Contaminants

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. The closest sensitive receptors to the project site are residences of single-family homes to the south and of multi-family apartments to the west project site. There are also a retirement community (BridgePoint at Los Altos) to the west 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

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

sources; 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.

City of Los Altos General Plan 2002-2020

The City of Los Altos General Plan 2002-2020 includes goals, policies, and actions to reduce exposure of the City's sensitive population to exposure of air pollution, toxic air contaminants, and GHG emissions. The following goals, policies, and actions are applicable to the proposed project:

Goal 8: Maintain or improve air quality in Los Altos.

Policy 8.1: Support the principles of reducing air pollutants through land use, transportation, and energy use planning.

Policy 8.2: Encourage transportation modes that minimize contaminant emissions from motor vehicle use.

Policy 8.3: Interpret and implement the General Plan to be consistent with the regional Bay Area Air Quality Management Plan, as periodically updated.

Policy 8.4: Ensure location and design of development projects so as to conserve air quality and minimize direct and indirect emissions of air contaminants.

City of Los Altos Climate Action Plan

The City of Los Altos has developed a Climate Action Plan (CAP).[6] The CAP includes a goal to improve communitywide emissions efficiency by 15 percent over 2005 levels by 2020. The reduction measures included in this plan are a diverse mix of incentives, education, and regulations applicable to both new and existing development. The measures are designed to reduce emissions from each source to avoid relying on any one strategy or sector to achieve the target.

[5] Bay Area Air Quality Management District, 2017. *CEQA Air Quality Guidelines*. May.
[6] PMC. City of Los Altos Climate Action Plan. December 2013.

Significance Thresholds

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

Table 1. Air Quality Significance Thresholds

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 µg/m^3	>0.8 µg/m^3	
Greenhouse Gas Emissions			
Land Use Projects – direct and indirect emissions	Compliance with a Qualified GHG Reduction Strategy OR 1,100 metric tons annually or 4.6 metric tons per capita (for 2020) 660 metric tons annually or 2.8 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: Conflict with or obstruct implementation of the applicable air quality plan?

BAAQMD is the regional agency responsible for overseeing compliance with State and Federal laws, regulations, and programs within the San Francisco Bay Area Air Basin (SFBAAB). BAAQMD, with assistance from the Association of Bay Area Governments (ABAG) and Metropolitan Transportation Commission (MTC), has prepared and implements specific plans to meet the applicable laws, regulations, and programs. The most recent and comprehensive of which is the *Bay Area 2017 Clean Air Plan*.[7] The primary goals of the Clean Air Plan are to attain air quality standards, reduce population exposure and protect public health, and reduce GHG emissions and protect the climate. The BAAQMD has also developed CEQA guidelines to assist lead agencies in evaluating the significance of air quality impacts. In formulating compliance strategies, BAAQMD relies on planned land uses established by local general plans. Land use planning affects vehicle travel, which in turn affects region-wide emissions of air pollutants and GHGs.

The 2017 Clean Air Plan, adopted by BAAQMD in April 2017, includes control measures that are intended to reduce air pollutant emissions in the Bay Area either directly or indirectly. Plans must show consistency with the control measures listed within the Clean Air Plan. At the project-level, there are no consistency measures or thresholds. The proposed project would not conflict with the latest Clean Air planning efforts since 1) project would have emissions below the BAAQMD thresholds (see Impact 2), 2) the project would be considered urban infill, and 3) the project would be located near transit with regional connections.

Impact 2: 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.

Due to the project size, construction and operational period emissions would be less than significant. In the 2017 CEQA Air Quality Guidelines, BAAQMD identifies screening criteria for the sizes of land use projects that could result in significant air pollutant emissions. For construction impact's, the screening size for mid-rise apartments is 240 dwelling units and for operational impacts the screening size is 494 dwelling units. Projects below these screening sizes

[7] Bay Area Air Quality Management District (BAAQMD), 2017. *Final 2017 Clean Air Plan.*

would be expected to have less-than-significant impacts with respect to construction and operational period emissions. Since the project proposes to develop 45 dwelling units, the emissions would be below the BAAQMD significance thresholds for the construction and operational period emissions and the impact would be *less-than-significant.*

Impact 3: Expose sensitive receptors to substantial pollutant concentrations?

Project impacts related to increased community risk can occur either by introducing a new source of TAC and air pollutant emissions or introducing new sensitive receptor, such as a residential use, in proximity to an existing source of TACs. 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 project construction impacts on the offsite sensitive receptors. 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, such as generators. The project would introduce new residents that are sensitive receptors. Traffic from El Camino Real is a source of emissions that could adversely affect project residents.

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 following sections discuss the community health risk impacts from construction, health risk impacts to the new project sensitive receptors, and the cumulative community health risk impact.

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 $PM_{2.5}$.[8] This assessment included dispersion modeling to predict the offsite and onsite concentrations resulting from project construction, so that lifetime cancer risks and non-cancer health effects could be evaluated.

The 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*.

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

Construction activity is anticipated to include demolition, grading and site preparation, building construction, and paving. Construction period emissions of DPM and $PM_{2.5}$ were modeled using CalEEMod. A build-out construction schedule including equipment usage assumptions was developed based on applicant provided information. The proposed project land uses were input into CalEEMod, which included 45 dwelling units entered as "Apartments Mid Rise" and 84 spaces entered as "Enclosed Parking with Elevator" on a 0.66-acre site. In addition, 28,500-sf of existing building demolition, 16,000 cubic yards of soil import during the grading phase, 18 one-way pavement demolition truck trips, 320 one-way cement truck trips during building construction, and 14 one-way asphalt truck trips during paving were entered into the model. Construction of the project is expected to occur over an approximate 17-month period beginning in January 2020.

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 0.0897 tons (179 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 0.0131 tons (26 pounds) for the overall construction period.

Dispersion Modeling

The U.S. EPA AERMOD dispersion model was used to predict DPM and $PM_{2.5}$ concentrations at sensitive receptors (residences) in the vicinity of the project construction area. The AERMOD dispersion model is a BAAQMD-recommended model for use in modeling analysis of these types of emission activities for CEQA projects.[9] Emission sources for the construction site were grouped into two categories: exhaust emissions of DPM and fugitive $PM_{2.5}$ dust emissions. Combustion equipment exhaust emissions were modeled as a series of point sources with a nine-foot release height (construction equipment exhaust stack height) placed at 5.5-meter (18-foot) intervals throughout the construction site. This resulted in 81 individual point sources being used to represent mobile equipment DPM exhaust emissions in the construction area, with DPM emissions occurring throughout the project construction site. The locations of the point sources used for the construction DPM emissions modeling are in Figure 1. Emissions from vehicle travel on- and off-site were distributed among the point sources throughout the site. Construction fugitive $PM_{2.5}$ dust emissions were modeled as an area source encompassing the entire construction site with a near ground level release height of two meters. Construction emissions were modeled as occurring daily between 7 a.m. to 4 p.m., when the majority of construction activity would occur.

The modeling used a 5-year meteorological data set (2009-2013) from the Moffett Federal Airfield Airport prepared for use with the AERMOD model by CARB. Annual DPM and $PM_{2.5}$

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

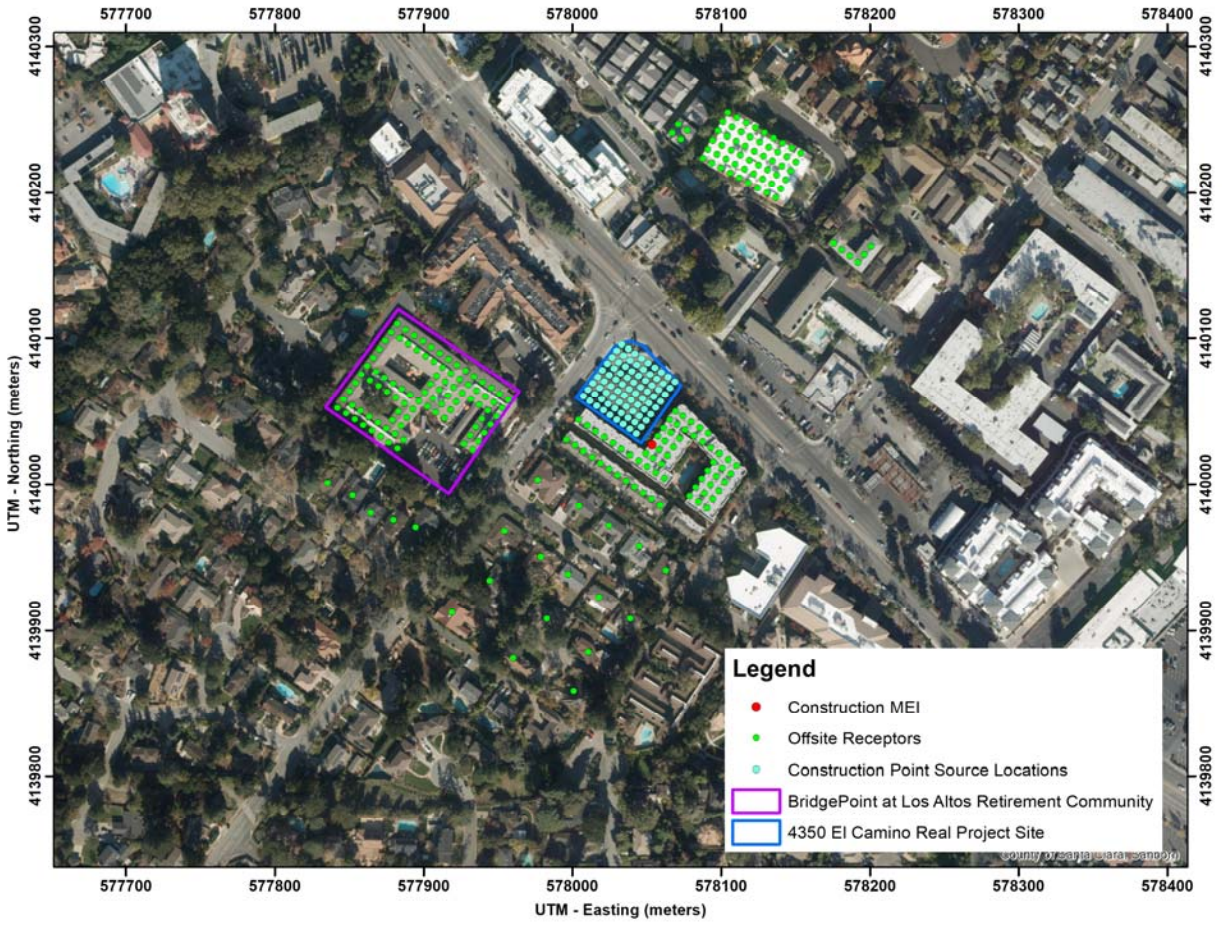
concentrations from construction activities at the project site during the 2021-2023 period were calculated using the model. DPM and $PM_{2.5}$ concentrations were calculated at nearby sensitive receptor locations. Receptor heights of 1.5 meters (4.9 feet), 4.5 meters (14.7 feet) and 7.5 meters (24.6 feet) were used to represent the breathing height of nearby residences in nearby apartments and single-family homes on the first, second, and third floor levels, respectively.

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 1) 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*. Third trimester, infant and adult exposures were assumed to occur at all residences through the entire construction period. Non-cancer health hazards and maximum $PM_{2.5}$ concentrations were also calculated and identified. *Attachment 3* includes the construction emission calculations and source information used in the modeling and the cancer risk calculations.

Community Risk Impacts

Figure 1 shows the locations where the maximum-modeled DPM and $PM_{2.5}$ concentrations occurred. The maximum concentrations occurred on the third-floor (7.5-meter receptor breathing height) of a townhome residence adjacent to the southern boundary of the project site. The maximum excess residential cancer risks at this location would be greater than the BAAQMD single-source threshold of 10 in one million and the maximum-modeled annual $PM_{2.5}$ concentration would be greater than the BAAQMD single-source threshold of 0.3 $\mu g/m^3$. Table 2 summarizes the maximum cancer risks, $PM_{2.5}$ concentrations, and health hazard indexes for project related construction activities affecting the residential MEI. *However, Mitigation Measures AQ-1 and AQ-2 would reduce these risks to a level of less-than-significant*.

Figure 1. Project Construction Site and Locations of Off-Site Sensitive Receptors and TAC Impacts from Project Construction



BridgePoint at Los Altos

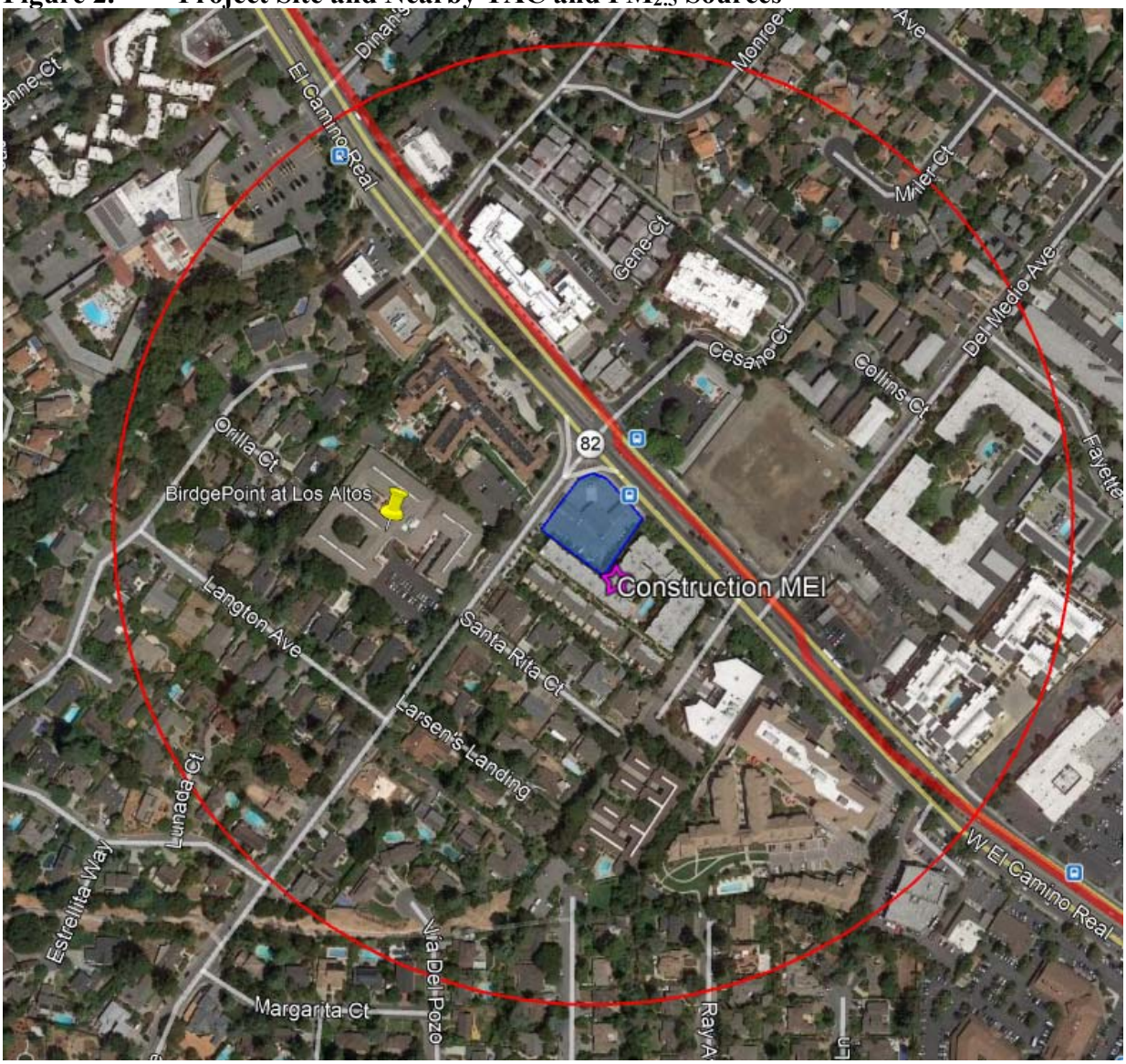
Additionally, modeling was conducted to calculate the risk impacts at BridgePoint at Los Altos, which is an adult retirement community. A receptor height of 1.5 meter (4.9 feet) was used to represent the breathing height of the adult seniors. The adult exposure parameters were used to calculate the maximum cancer risk. Results of this assessment indicated that maximum increased cancer risk, assuming adult exposure and without any mitigation or construction emissions control, would be 0.1 in one million. The maximum-modeled annual $PM_{2.5}$ concentration, which is based on combined exhaust and fugitive dust emissions, would be 0.02 $\mu g/m^3$, and the maximum computed HI based on this DPM concentration would be <0.01.

<u>Cumulative Community Health Risk at Project Site</u>

Community health risk assessments typically look at all substantial sources of TACs located within 1,000 feet of project sites and at new TAC sources that would be potentially introduced by the project. These sources include highways, busy surface streets, and stationary sources identified by BAAQMD. A review of the project area indicates that the only TAC source within the 1,000-ft influence area that would impact the incoming project sensitive receptors is

vehicular traffic on El Camino Real. No stationary sources were identified since the project would demolish the existing gas station on-site. Figure 2 shows the TAC sources within the 1,000-foot influence area. Details of the modeling and community risk calculations are included in *Attachment 4.*

Figure 2. Project Site and Nearby TAC and $PM_{2.5}$ Sources



Highways – El Camino Real (State Route 82)

BAAQMD provides a Google Earth *Highway Screening Analysis Tool* that can be used to identify screening level impacts from State highways. El Camino Real (i.e. Link 244, 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 hazard index correspond to the distance between the project and the roadway was used. The risk values were based on the project being 150 feet west 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 risk impacts from El Camino Real at the MEI are discussed in Table 2.

Cumulative Impact on Off-Site MEI

Table 2 reports both the project and cumulative community risk impacts at the sensitive receptor most affected by construction (i.e. the MEI). Without mitigation, the project would have a *significant* impact with respect to community risk caused by project construction activities, since the maximum cancer risk and $PM_{2.5}$ concentration exceed their single-source thresholds. The combined unmitigated annual cancer risk and maximum $PM_{2.5}$ concentration would also exceed the cumulative-source thresholds. However, *Mitigation Measure AQ-1 and AQ-2* would reduce these the single and cumulative risks to a level of *less-than-significant* as seem in Table 2.

Table 2. Impacts from Combined Sources at Off-Site MEI

Source	Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
Project Construction			
Unmitigated	**129.2** (infant)	0.**65**	0.11
Mitigated	7.1 (infant)	0.05	0.01
BAAQMD Single-Source Threshold	***>10.0***	***>0.3***	***>1.0***
Significant?			
Unmitigated	**Yes**	**Yes**	No
Mitigated	No	No	No
El Camino Real (i.e. Highway 82) at 150 feet west	23.3	0.22	0.02
Combined Sources			
Unmitigated	**152.5** (infant)	**0.87**	0.13
Mitigated	30.4 (infant)	0.27	0.03
BAAQMD Cumulative Source Threshold	***>100***	***>0.8***	***>10.0***
Significant?			
Unmitigated	**Yes**	**Yes**	No
Mitigated	No	No	No

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

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

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

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

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

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

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

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

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

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

Effectiveness of Mitigation Measure AQ-1

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

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 93-percent reduction in DPM exhaust emissions or greater. One feasible plan to achieve this reduction would include the following:

1. For equipment used during the site preparation and grading phases, 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 4 engines.[10] Equipment that is electrically powered or uses non-diesel fuels would meet this requirement.

2. For the remaining phases, diesel-powered off-road equipment, larger than 25 horsepower, operating on the site for more than two days continuously shall, at a

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

minimum, meet U.S. EPA particulate matter emissions standards for Tier 3 engines with CARB-certified Level 3 Diesel Particulate Filters (DPF)[11] 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.

3. Portable equipment (i.e. air compressors, cement and mortar mixers, and concrete/industrial saws) shall be electrically powered.

Effectiveness of Mitigation AQ-2

With mitigation described above using equipment that meets Tier 4 particulate matter standards during the site preparation and grading phases, using equipment that meets Tier 3 DPF 3 particulate matter standards during the remaining phases, and using electrical portable equipment, the computed maximum increased lifetime residential cancer risk from construction, assuming infant exposure, would be 7.1 in one million or less, the maximum annual $PM_{2.5}$ concentration would be 0.05 $\mu g/m^3$, and the Hazard Index would be <0.01.

Operational Community Health Risk Impacts – New Residents

Additionally, a health risk assessment was completed to analyze the impact existing TAC sources would have on the new proposed sensitive receptors that that project would introduce. The same TAC source identified above (i.e., El Camino Real) was used in this HRA assessment.

Since the BAAQMD screening tools indicated increased cancer risk and $PM_{2.5}$ concentrations at the project residential units closest to El Camino Real could exceed the respective single-source thresholds, refined modeling was conducted. Refined modeling tends to predict more accurate results than the BAAQMD screening tool because project-specific information is used in the modeling. This includes roadway orientation with respect to receptors (i.e., where dwelling units would be located with respect to traffic), traffic volumes and emission estimates (i.e., based on traffic speeds and traffic mix), and meteorological conditions near the project.

The refined analysis involved predicting traffic emissions for the traffic volume and mix of vehicle types on El Camino Real near the project site. These emissions were entered into a dispersion model to predict exposure to TACs. The associated cancer risks were computed based on the BAAQMD recommended methods.[12] *Attachment 1* includes a description of how community risk impacts, including cancer risk are computed.

El Camino Real Traffic Emissions

A review of the traffic information reported by the California Department of Transportation (Caltrans) indicates that the section of El Camino Real closest to the project has an average daily traffic (ADT) of 45,200 vehicles.[13] This includes about 2.6 percent trucks, of which 0.6 percent

[11] See http://www.arb.ca.gov/diesel/verdev/vt/cvt.htm
[12] *BAAQMD Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines*. December 2016.
[13] California Department of Transportation. 2018. *2017 Traffic Volumes on the California State Highway System*.

are considered heavy duty trucks and 2.0 percent are medium duty trucks.[14] The analysis involved the development of DPM, $PM_{2.5}$, and organic TAC emissions for traffic on El Camino Real using the CARB EMFAC2014 emission factor model and the traffic mix on El Camino Real, based on the Caltrans traffic data. DPM emissions are projected to decrease in the future and are reflected in the EMFAC2014 emissions data. 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 retrofitted to meet similar standards. With this regulation, older, more polluting trucks would be removed from the roads sooner.

Residential occupation of the project was assumed to begin in 2022 or thereafter. In order to estimate TAC and $PM_{2.5}$ emissions over the 30-year exposure period (2022 – 2051) used for calculating increased cancer risks of new project residents from traffic on El Camino Real, the EMFAC2014 model was used to develop vehicle emission factors for the year 2022 using the calculated mix of cars and trucks on El Camino Real. Year 2022 emissions were conservatively assumed as being representative of future conditions over the time period that cancer risks are evaluated (30 years), since overall vehicle emissions, and in particular diesel truck emissions will decrease in the future. Default EMFAC2014 vehicle model fleet age distributions for Santa Clara County were used. Average daily traffic volumes were calculated for 2022 based on Caltrans data for El Camino Real in 2017 and assuming traffic volumes increased 1 percent per year. Average hourly traffic distributions for Santa Clara County roadways were developed using the EMFAC model,[15] which were then applied to the average daily traffic volumes to obtain estimated hourly traffic volumes and emissions for El Camino Real. An average travel speed of 35 mph was used for all hours except two hours in the morning and evening peak periods. Average travel speeds during those hours were assumed to be 25 mph between 7 a.m. and 9 a.m. and between 4 p.m. and 6 p.m.

Emissions of total organic gases (TOG) were also calculated for 2022 using the EMFAC2014 model. These TOG emissions were then used in the modeling the organic TACs. TOG emissions from exhaust and for running evaporative loses from gasoline vehicles were calculated using EMFAC2014 default model values for Santa Clara County along with the traffic volumes and vehicle mixes for El Camino Real. $PM_{2.5}$ emissions for vehicles traveling on El Camino Real were calculated using the same basic approach that was used for assessing TAC emissions. All $PM_{2.5}$ emissions from all vehicles were used, rather than just the $PM_{2.5}$ fraction from diesel powered vehicles, because all vehicle types (i.e., gasoline and diesel powered) produce $PM_{2.5}$. Additionally, $PM_{2.5}$ emissions from vehicle tire and brake wear and from re-entrained roadway dust were included in these emissions. $PM_{2.5}$ re-entrained dust

[14] California Department of Transportation. 2017. *2016 Annual Average Daily Truck Traffic on California State Highways*

[15] The Burden output from EMFAC2007, a previous version of the EMFAC model, was used for this since the current web-based version of EMFAC2014 does not include Burden type output with hour by hour traffic volume information.

emissions from vehicles traffic were calculated using CARB emission calculation procedures.[16] The emission rate calculations used in the analysis are shown in *Attachment 4*.

Dispersion Modeling

Dispersion modeling of TAC and $PM_{2.5}$ emissions was conducted using the EPA AERMOD model, which is a BAAQMD recommended model for this type of analysis.[17] North and south bound traffic on El Camino Real within about 1,000 feet of the project site were evaluated with the model. The modeling used a five-year meteorological data set (2009-2013) from the Moffett Federal Airfield Airport prepared for use with the AERMOD model by CARB. The airport is about 3.8 miles northeast of the project site. Other inputs to the model included road geometry, emission rates, and on-site project receptor locations and heights. Emissions from vehicles traveling on El Camino Real were modeled as line sources comprised of a series adjacent volume sources along each road segment modeled. The modeling included on-site receptors placed in the project residential areas on the first through fourth floor levels. Receptor heights of 1.5 meters (4.9 feet), 4.5 meters (14.8 feet), 7.6 meters (24.9 feet), and 10.6 meters (34.8 feet) were used to represent the breathing heights of residents on the first, second, third, and fourth floors, respectively. The closest receptors to El Camino Real, and most affected, are those at the first floor that were represented with a receptor height of 1.5 meters. Figure 3 shows the roadway segments modeled and the project residential receptor locations used in the modeling.

Community Risk Levels

The maximum increased lifetime cancer risks and annual $PM_{2.5}$ concentrations for new residents at the first through third floor levels are shown in Table 3 and were computed using modeled TAC and $PM_{2.5}$ concentrations and the BAAQMD recommended methods and exposure parameters described in *Attachment 1*. Increased lifetime cancer risks are calculated assuming that the initial exposure to roadway TACs occurs during the third trimester of pregnancy and then continues with increasing age over the next 30 years. The maximum impacts occurred at the first-floor residential level in the northeastern portion of the project site, as shown in Figure 3.

The maximum cancer risk of 4.2 in one million is below the BAAQMD significance threshold of greater than 10.0 in one million for cancer risk. The maximum $PM_{2.5}$ concentration of 0.73 $\mu g/m^3$ is above the BAAQMD significance threshold of an annual $PM_{2.5}$ concentration greater than 0.3 $\mu g/m^3$. The maximum non-cancer health impact (hazard index) is less than 0.01 and is well below its BAAQMD significance threshold of a hazard index of 1.0. The location where the maximum TAC and $PM_{2.5}$ impacts from El Camino Real occurred is shown in Figure 3. Cancer risk at all floor levels and $PM_{2.5}$ impacts above the third-floor level would be below the significance thresholds for cancer risk and $PM_{2.5}$ concentration. Figure 4 shows the computed lifetime cancer risk at first floor residential locations across the site. Modeled cancer risks range from 2.0 in one million to 4.2 in one million. Figures 5, 6, 7, and 8 show the annual $PM_{2.5}$ concentrations at first, second, third, and fourth floor residential locations across the project site. On the first-floor level the $PM_{2.5}$ concentrations range from 0.34 to 0.73 $\mu g/m^3$. Second-floor

[16] CARB, 2018. *Miscellaneous Process Methodology 7.9, Entrained Road Travel, Paved Road Dust*. Revised and updated, March 2018.
[17] BAAQMD, 2012. *Recommended Methods for Screening and Modeling Local Risks and Hazards*. May 2012.

level the $PM_{2.5}$ concentrations range from 0.31 to 0.62 µg/m^3, third-floor level $PM_{2.5}$ concentrations range from 0.23 to 0.35 µg/m^3, and fourth-floor level $PM_{2.5}$ concentrations range from 0.17 to 0.21 µg/m^3. Results are listed in Table 3. The modeling results and health risk calculations for the receptor with the maximum cancer risk from El Camino Real traffic are also provided in *Attachment 4*.

Figure 3. Project Site, On-Site Sensitive Receptors, Roadway Segments Modeled and Receptors with Maximum TAC Impacts

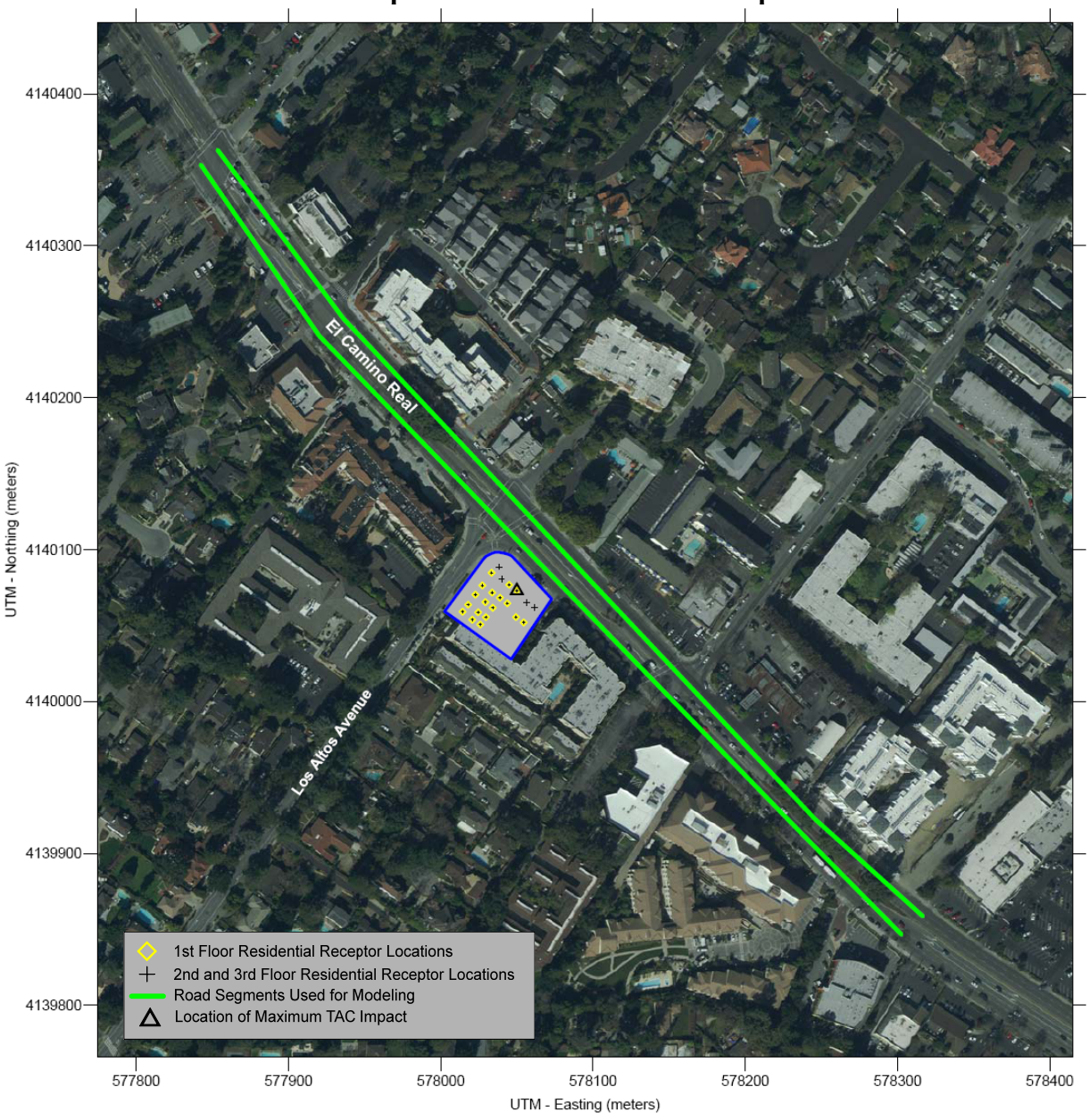


Table 3. Maximum Health Risk Impacts from El Camino Real Traffic at Project Site

Source/Receptor Locations	Maximum Cancer Risk (per million)	Maximum Annual $PM_{2.5}$ ($\mu g/m^3$)	Maximum Hazard Index
El Camino Real Traffic			
1st Floor Level	4.2	**0.73**	
2nd Floor Level	3.7	**0.62**	<0.01
3rd Floor Level	2.3	**0.35**	<0.01
4th Floor Level and above	1.4	0.21	<0.01
BAAQMD Single-Source Threshold	***>10.0***	***>0.3***	***>1.0***
Significant?	*No*	***Yes***	*No*

Figure 4. 1st Floor Level - Maximum Increased Cancer Risks (per million) in Project Residential Areas

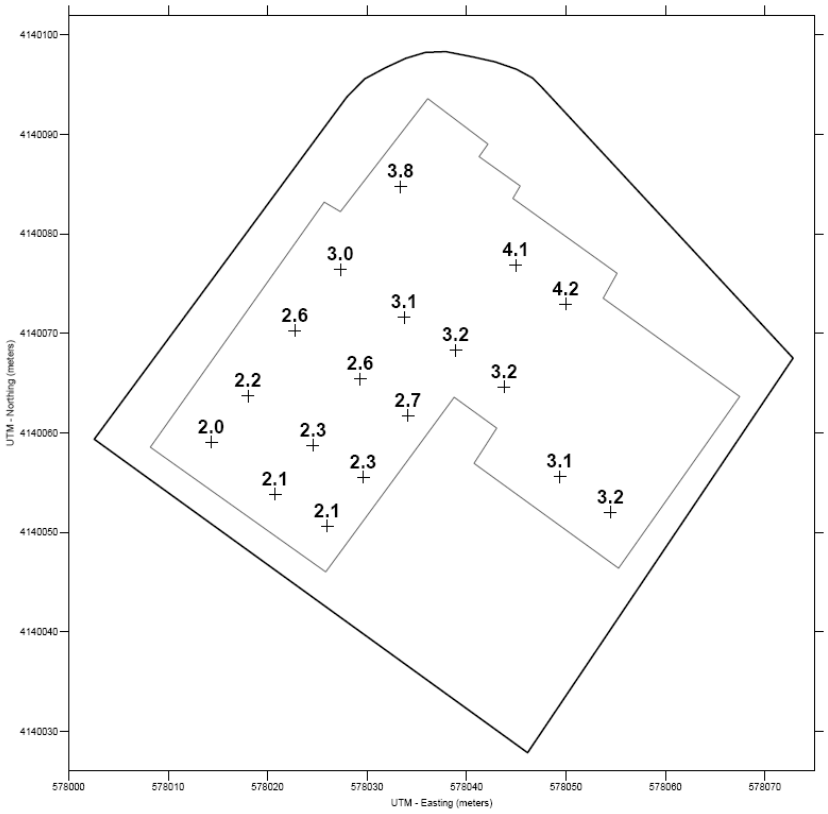


Figure 5. 1st Floor Level - Maximum $PM_{2.5}$ Concentrations ($\mu g/m^3$) in Project Residential Areas

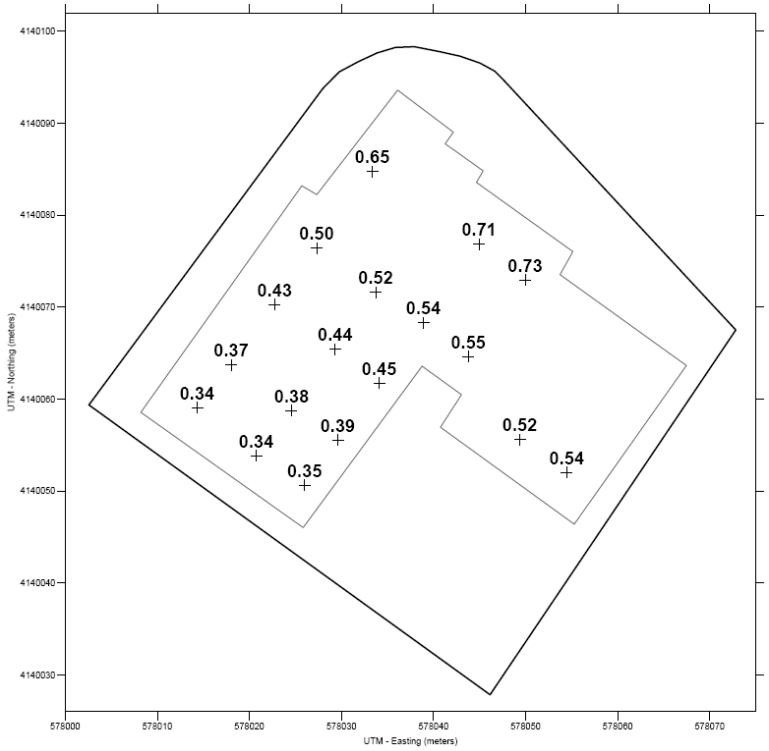


Figure 6. 2nd Floor Level - Maximum $PM_{2.5}$ Concentrations ($\mu g/m^3$) in Project Residential Areas

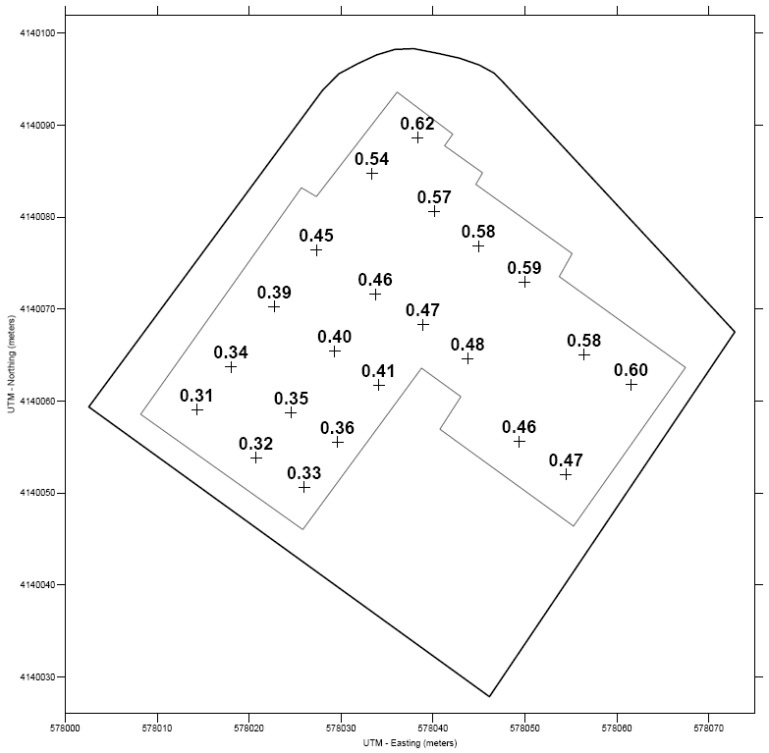


Figure 7. 3rd Floor Level - Maximum $PM_{2.5}$ Concentrations ($\mu g/m^3$) in Project Residential Areas

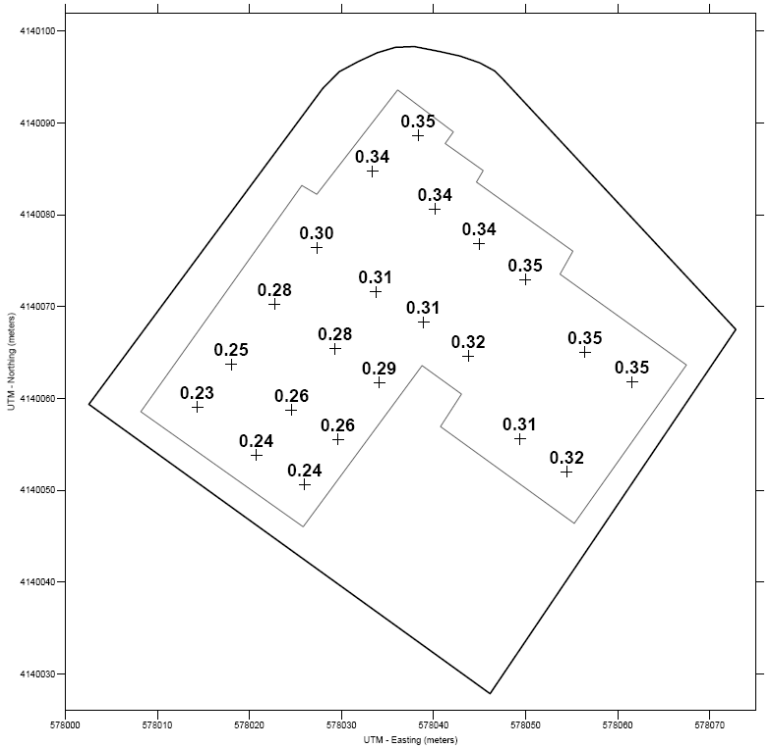
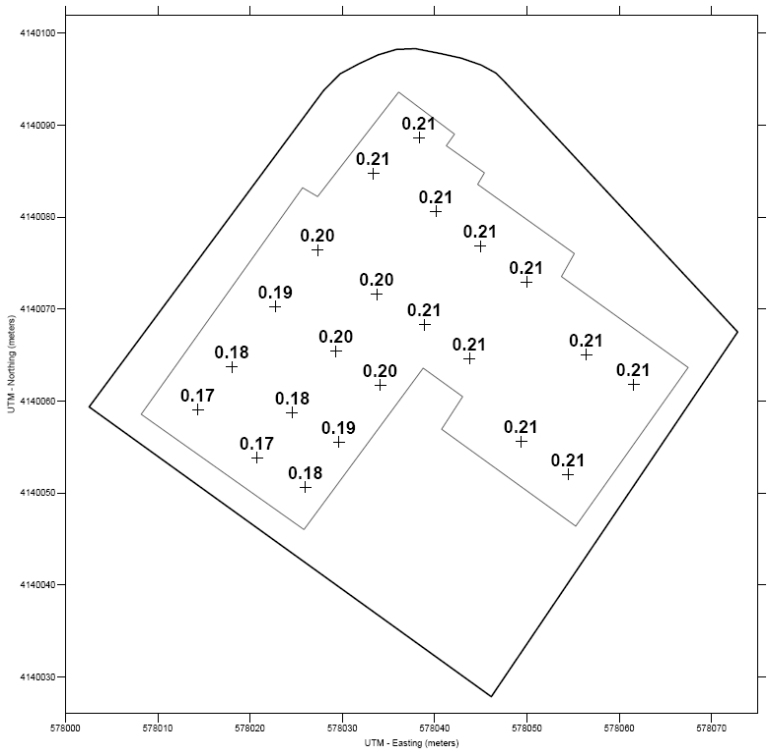


Figure 8. 4th Floor Level - Maximum $PM_{2.5}$ Concentrations ($\mu g/m^3$) in Project Residential Areas



Mitigation Measure AQ-3: **The project shall include the following measures to minimize long-term TAC and annual $PM_{2.5}$ exposure for new project occupants:**

Filtration in ventilation systems would be required to reduce the level of harmful pollutants (i.e., $PM_{2.5}$) to acceptable levels. The exposure for new project receptors is judged by two effects: (1) increased cancer risk, and (2) annual $PM_{2.5}$ concentration. Exposure to annual $PM_{2.5}$ concentrations from El Camino Real is above the threshold for some portions of the project site. Annual $PM_{2.5}$ concentrations are based on the exposure to $PM_{2.5}$ resulting from emissions attributable to truck and auto exhaust, the wearing of brakes and tires, and re-entrainment of roadway dust from vehicles traveling over pavement. The modeled $PM_{2.5}$ exposure to future residents drives the exposure reduction plan. Reducing particulate matter exposure would reduce both annual $PM_{2.5}$ exposures and cancer risk.

To ensure adequate health protection to sensitive receptors, a ventilation system is proposed to meet the following minimal design standards to minimize long-term annual $PM_{2.5}$ exposure for new project occupants:

1. Install air filtration in residential buildings. Air filtration devices shall be rated MERV13 or higher for portions of the site that have annual $PM_{2.5}$ exposure above 0.3 $\mu g/m^3$ (see Figure 5, 6, and 7). To ensure adequate health protection to sensitive receptors (i.e., residents), this ventilation system, whether mechanical or passive, all fresh air circulated into the dwelling units shall be filtered.

2. As part of implementing this measure, an ongoing maintenance plan for the buildings' heating, ventilation, and air conditioning (HVAC) air filtration system shall be required.

3. Ensure that the use agreement and other property documents: (1) require cleaning, maintenance, and monitoring of the affected buildings for air flow leaks, (2) include assurance that new owners or tenants are provided information on the ventilation system, and (3) include provisions that fees associated with owning or leasing a unit(s) in the building include funds for cleaning, maintenance, monitoring, and replacements of the filters, as needed.

Effectiveness of Mitigation AQ-3

A properly installed and operated ventilation system with MERV13 would achieve an 80-percent reduction.[18] Increased cancer risk and $PM_{2.5}$ exposures for MERV13 filtration cases were calculated assuming a combination of outdoor and indoor exposure. For use of MERV13 filtration systems, assuming exposure to outdoor air at each unit (from open windows or being outside the unit) of three hours to ambient $PM_{2.5}$ concentrations and 21 hours of indoor exposure to filtered air was assumed. In this case, the effective control efficiency using MERV13 is about

[18] Bay Area Air Quality Management District (2016). Appendix B: Best Practices to Reduce Exposure to Local Air Pollution, *Planning Healthy Places A Guidebook for Addressing Local Sources of Air Pollutants in Community Planning* (p. 38). http://www.baaqmd.gov/~/media/files/planning-and-research/planning-healthy-places/php_may20_2016-pdf.pdf?la=en

70 percent for $PM_{2.5}$ exposure. This would reduce the maximum annual $PM_{2.5}$ concentration of 0.73 to about 0.22 $\mu g/m^3$. This mitigated level would not exceed the recommended significance thresholds for annual $PM_{2.5}$ exposure from any single source of air pollutants or TACs.

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.

City of Los Altos Climate Action Plan

The City of Los Altos Climate Action Plan (CAP), adopted December 2013, is a document that the City has designed in order to identify activities that contribute to GHG emissions and to create strategies that will help the City achieve its GHG reduction goals. The City adopted an GHG emissions reduction target of 15% below the 2005 baseline level by 2020. Additionally, to implement and monitor the success of the CAP, the City of Los Altos requires all new projects to comply with their CAP checklist. This document helps city planners ensure that the new project would be consistent with the City's GHG reduction goals. A project must incorporate all the Best management Practices (BMPs) identified in the checklist.

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.[19]

Impact 1: 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.

As mentioned above, BAAQMD includes project land use screening sizes in the 2017 BAAQMD CEQA Guidelines. The screening size for operational GHG emissions is 87 dwelling units, and this project includes only 45 dwelling units. Therefore, the GHG emissions would be below the BAAQMD significance threshold for GHG in 2020. Alternatively, if the project were to start operation beyond 2020, then it is assumed that GHG emissions would remain less-than-significant since emissions decrease over time due to improvements in vehicle emissions and use of cleaner energy.

Impact 2: Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The proposed project would not conflict or otherwise interfere with the statewide GHG reduction measures identified in CARB's Scoping Plan. For example, proposed buildings would be constructed in conformance with CALGreen and the Title 24 Building Code, which requires high-efficiency water fixtures and water-efficient irrigation systems. The project is also subject to the City of Los Altos' CAP and must comply with the BMPs identified in the CAP checklist.

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

Supporting Documentation

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

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

Attachment 3 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 4 includes the emission and health risk assessment calculations for Highway 82 (El Camino Real). 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.[20] 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.[21] This HRA used the 2015 OEHHA risk assessment guidelines and CARB guidance. The BAAQMD has adopted recommended procedures for applying the newest OEHHA guidelines as part of Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants.[22] 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 and duration of exposure. These parameters vary depending on the age, or age range, of the persons being exposed and whether the exposure is considered to occur at a residential location or other sensitive receptor location.

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

[20] 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.
[21] CARB, 2015. *Risk Management Guidance for Stationary Sources of Air Toxics*. July 23.
[22] BAAQMD, 2016. *BAAQMD Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines*. December 2016.

30 years for sources with long-term emissions (e.g., roadways). For workers, assumed to be adults, a 25-year exposure period is recommended by the BAAQMD.

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) 80th Percentile Rate		273	758	631	572	261
Daily Breathing Rate (L/kg-day) 95th Percentile Rate		361	1,090	861	745	335
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

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

19-049 4350 ECR Los Altos

Santa Clara County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Mid Rise	45.00	Dwelling Unit	0.66	67,862.00	129
Enclosed Parking with Elevator	84.00	Space	0.00	37,678.00	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)	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 290

Land Use - Land Use from Project Applicant Construction Sheet

Construction Phase - Project Applicant provided construction schedule, used total workdays per phase

Off-road Equipment - Default construction equipment per discussion with applicant

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - Default trenching equipment per discussion with project applicant

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Grading - import 16,000-cy of soil during grading

Demolition - Demo of 28,500-sf

Trips and VMT - Water truck trips assumed, 90-tons of pavement demoed = 18 one-way trips, 160 round-trip cement truck trips, 16-cy of asphalt = 14 one way trips for paving

Woodstoves - Assuming no wood burning, all gas

Energy Use -

Water And Wastewater - 100% aerobic to account for wastewater treatment plants

Vehicle Trips - weekday trip rate = 5.44, saturday trip rate = 5.22, sunday trip rate = 4.79

Construction Off-road Equipment Mitigation - BMPs, Tier 3 mitigation

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
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
tblConstructionPhase	NumDays	5.00	151.00
tblConstructionPhase	NumDays	100.00	132.00
tblConstructionPhase	NumDays	10.00	23.00
tblConstructionPhase	NumDays	2.00	42.00
tblConstructionPhase	NumDays	5.00	86.00
tblConstructionPhase	NumDays	1.00	23.00
tblConstructionPhase	PhaseEndDate	6/19/2020	5/31/2021
tblConstructionPhase	PhaseEndDate	6/5/2020	12/31/2020
tblConstructionPhase	PhaseEndDate	1/14/2020	2/1/2020
tblConstructionPhase	PhaseEndDate	1/17/2020	3/31/2020
tblConstructionPhase	PhaseEndDate	6/12/2020	5/31/2021
tblConstructionPhase	PhaseEndDate	1/15/2020	2/1/2020
tblConstructionPhase	PhaseStartDate	6/13/2020	11/1/2020
tblConstructionPhase	PhaseStartDate	1/18/2020	7/1/2020
tblConstructionPhase	PhaseStartDate	1/16/2020	2/1/2020
tblConstructionPhase	PhaseStartDate	6/6/2020	2/1/2021
tblConstructionPhase	PhaseStartDate	1/15/2020	1/1/2020
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	6.75	14.40
tblFireplaces	NumberWood	7.65	0.00
tblGrading	MaterialImported	0.00	16,000.00
tblLandUse	LandUseSquareFeet	45,000.00	67,862.00
tblLandUse	LandUseSquareFeet	33,600.00	37,678.00
tblLandUse	LotAcreage	1.18	0.66
tblLandUse	LotAcreage	0.76	0.00
tblOffRoadEquipment	OffRoadEquipmentType		Excavators

tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblTripsAndVMT	HaulingTripNumber	130.00	148.00
tblTripsAndVMT	HaulingTripNumber	0.00	320.00
tblTripsAndVMT	HaulingTripNumber	0.00	14.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	11.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblVehicleTrips	ST_TR	6.39	5.22
tblVehicleTrips	SU_TR	5.86	4.79
tblVehicleTrips	WD_TR	6.65	5.44
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	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	0.2878	1.6059	1.2860	3.0900e-003	0.0917	0.0699	0.1617	0.0266	0.0651	0.0917	0.0000	280.6357	280.6357	0.0483	0.0000	281.8421
2021	0.3909	0.3752	0.4325	7.4000e-004	0.0105	0.0203	0.0308	2.7900e-003	0.0192	0.0220	0.0000	63.1688	63.1688	0.0129	0.0000	63.4918
Maximum	**0.3909**	**1.6059**	**1.2860**	**3.0900e-003**	**0.0917**	**0.0699**	**0.1617**	**0.0266**	**0.0651**	**0.0917**	**0.0000**	**280.6357**	**280.6357**	**0.0483**	**0.0000**	**281.8421**

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	0.2083	1.3000	1.3895	3.0900e-003	0.0720	0.0568	0.1288	0.0177	0.0568	0.0745	0.0000	280.6355	280.6355	0.0483	0.0000	281.8419
2021	0.3610	0.2819	0.4252	7.4000e-004	0.0105	0.0177	0.0282	2.7900e-003	0.0177	0.0205	0.0000	63.1687	63.1687	0.0129	0.0000	63.4917
Maximum	**0.3610**	**1.3000**	**1.3895**	**3.0900e-003**	**0.0720**	**0.0568**	**0.1288**	**0.0177**	**0.0568**	**0.0745**	**0.0000**	**280.6355**	**280.6355**	**0.0483**	**0.0000**	**281.8419**

	ROG	NOx	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	**16.13**	**20.15**	**-5.60**	**0.00**	**19.33**	**17.42**	**18.44**	**30.24**	**11.74**	**16.53**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2020**	**3-31-2020**	0.6630	0.5347
2	**4-1-2020**	**6-30-2020**	0.1259	0.1118
3	**7-1-2020**	**9-30-2020**	0.5245	0.4016
4	**10-1-2020**	**12-31-2020**	0.5829	0.4632
5	**1-1-2021**	**3-31-2021**	0.4246	0.3622
6	**4-1-2021**	**6-30-2021**	0.3443	0.2836
		Highest	0.6630	0.5347

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	0.3264	5.4200e-003	0.3359	3.0000e-005		1.9800e-003	1.9800e-003		1.9800e-003	1.9800e-003	0.0000	2.3450	2.3450	5.6000e-004	3.0000e-005	2.3689
Energy	2.1000e-003	0.0179	7.6200e-003	1.1000e-004		1.4500e-003	1.4500e-003		1.4500e-003	1.4500e-003	0.0000	74.2273	74.2273	5.7500e-003	1.4900e-003	74.8140
Mobile	0.0555	0.2351	0.6446	2.2300e-003	0.2054	1.8900e-003	0.2073	0.0550	1.7700e-003	0.0568	0.0000	203.9952	203.9952	6.8900e-003	0.0000	204.1676
Waste						0.0000	0.0000		0.0000	0.0000	4.2019	0.0000	4.2019	0.2483	0.0000	10.4101
Water						0.0000	0.0000		0.0000	0.0000	1.0373	2.9379	3.9752	3.8600e-003	2.3200e-003	4.7621
Total	**0.3840**	**0.2584**	**0.9881**	**2.3700e-003**	**0.2054**	**5.3200e-003**	**0.2108**	**0.0550**	**5.2000e-003**	**0.0602**	**5.2392**	**283.5054**	**288.7446**	**0.2654**	**3.8400e-003**	**296.5227**

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	0.3264	5.4200e-003	0.3359	3.0000e-005		1.9800e-003	1.9800e-003		1.9800e-003	1.9800e-003	0.0000	2.3450	2.3450	5.6000e-004	3.0000e-005	2.3689
Energy	2.1000e-003	0.0179	7.6200e-003	1.1000e-004		1.4500e-003	1.4500e-003		1.4500e-003	1.4500e-003	0.0000	74.2273	74.2273	5.7500e-003	1.4900e-003	74.8140
Mobile	0.0555	0.2351	0.6446	2.2300e-003	0.2054	1.8900e-003	0.2073	0.0550	1.7700e-003	0.0568	0.0000	203.9952	203.9952	6.8900e-003	0.0000	204.1676
Waste						0.0000	0.0000		0.0000	0.0000	4.2019	0.0000	4.2019	0.2483	0.0000	10.4101
Water						0.0000	0.0000		0.0000	0.0000	1.0373	2.9379	3.9752	3.8600e-003	2.3200e-003	4.7621
Total	**0.3840**	**0.2584**	**0.9881**	**2.3700e-003**	**0.2054**	**5.3200e-003**	**0.2108**	**0.0550**	**5.2000e-003**	**0.0602**	**5.2392**	**283.5054**	**288.7446**	**0.2654**	**3.8400e-003**	**296.5227**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2020	2/1/2020	5	23	
2	Site Preparation	Site Preparation	1/1/2020	2/1/2020	5	23	
3	Grading	Grading	2/1/2020	3/31/2020	5	42	
4	Trenching	Trenching	4/1/2020	9/30/2020	5	131	
5	Building Construction	Building Construction	7/1/2020	12/31/2020	5	132	
6	Architectural Coating	Architectural Coating	11/1/2020	5/31/2021	5	151	
7	Paving	Paving	2/1/2021	5/31/2021	5	86	

Acres of Grading (Site Preparation Phase): 11.5

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 137,421; Residential Outdoor: 45,807; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area:

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Site Preparation	Graders	1	8.00	187	0.41

Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Demolition	Rubber Tired Dozers	1	1.00	247	0.40
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Trenching	Excavators	1	6.00	158	0.38
Trenching	Tractors/Loaders/Backhoes	1	6.00	97	0.37

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	4	10.00	1.00	148.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	5.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	1.00	1,582.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	48.00	12.00	320.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	14.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	2	5.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use Soil Stabilizer

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 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					0.0140	0.0000	0.0140	2.1200e-003	0.0000	2.1200e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.9700e-003	0.0905	0.0877	1.4000e-004		5.3700e-003	5.3700e-003		5.1300e-003	5.1300e-003	0.0000	11.9687	11.9687	2.2600e-003	0.0000	12.0253
Total	**9.9700e-003**	**0.0905**	**0.0877**	**1.4000e-004**	**0.0140**	**5.3700e-003**	**0.0194**	**2.1200e-003**	**5.1300e-003**	**7.2500e-003**	**0.0000**	**11.9687**	**11.9687**	**2.2600e-003**	**0.0000**	**12.0253**

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	6.1000e-004	0.0215	4.4000e-003	6.0000e-005	1.2500e-003	7.0000e-005	1.3200e-003	3.4000e-004	7.0000e-005	4.1000e-004	0.0000	5.6440	5.6440	2.6000e-004	0.0000	5.6505
Vendor	5.0000e-005	1.3100e-003	3.5000e-004	0.0000	8.0000e-005	1.0000e-005	8.0000e-005	2.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.3007	0.3007	1.0000e-005	0.0000	0.3010
Worker	3.8000e-004	2.7000e-004	2.8800e-003	1.0000e-005	9.1000e-004	1.0000e-005	9.2000e-004	2.4000e-004	1.0000e-005	2.5000e-004	0.0000	0.7822	0.7822	2.0000e-005	0.0000	0.7827
Total	**1.0400e-003**	**0.0231**	**7.6300e-003**	**7.0000e-005**	**2.2400e-003**	**9.0000e-005**	**2.3200e-003**	**6.0000e-004**	**9.0000e-005**	**6.9000e-004**	**0.0000**	**6.7269**	**6.7269**	**2.9000e-004**	**0.0000**	**6.7341**

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					6.3100e-003	0.0000	6.3100e-003	4.8000e-004	0.0000	4.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0500e-003	0.0686	0.0913	1.4000e-004		4.6200e-003	4.6200e-003		4.6200e-003	4.6200e-003	0.0000	11.9687	11.9687	2.2600e-003	0.0000	12.0252
Total	**3.0500e-003**	**0.0686**	**0.0913**	**1.4000e-004**	**6.3100e-003**	**4.6200e-003**	**0.0109**	**4.8000e-004**	**4.6200e-003**	**5.1000e-003**	**0.0000**	**11.9687**	**11.9687**	**2.2600e-003**	**0.0000**	**12.0252**

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	6.1000e-004	0.0215	4.4000e-003	6.0000e-005	1.2500e-003	7.0000e-005	1.3200e-003	3.4000e-004	7.0000e-005	4.1000e-004	0.0000	5.6440	5.6440	2.6000e-004	0.0000	5.6505
Vendor	5.0000e-005	1.3100e-003	3.5000e-004	0.0000	8.0000e-005	1.0000e-005	8.0000e-005	2.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.3007	0.3007	1.0000e-005	0.0000	0.3010
Worker	3.8000e-004	2.7000e-004	2.8800e-003	1.0000e-005	9.1000e-004	1.0000e-005	9.2000e-004	2.4000e-004	1.0000e-005	2.5000e-004	0.0000	0.7822	0.7822	2.0000e-005	0.0000	0.7827
Total	**1.0400e-003**	**0.0231**	**7.6300e-003**	**7.0000e-005**	**2.2400e-003**	**9.0000e-005**	**2.3200e-003**	**6.0000e-004**	**9.0000e-005**	**6.9000e-004**	**0.0000**	**6.7269**	**6.7269**	**2.9000e-004**	**0.0000**	**6.7341**

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					6.1000e-003	0.0000	6.1000e-003	6.6000e-004	0.0000	6.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	7.8800e-003	0.0970	0.0471	1.1000e-004		3.8600e-003	3.8600e-003		3.5500e-003	3.5500e-003	0.0000	9.8431	9.8431	3.1800e-003	0.0000	9.9226
Total	**7.8800e-003**	**0.0970**	**0.0471**	**1.1000e-004**	**6.1000e-003**	**3.8600e-003**	**9.9600e-003**	**6.6000e-004**	**3.5500e-003**	**4.2100e-003**	**0.0000**	**9.8431**	**9.8431**	**3.1800e-003**	**0.0000**	**9.9226**

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	5.0000e-005	1.3100e-003	3.5000e-004	0.0000	8.0000e-005	1.0000e-005	8.0000e-005	2.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.3007	0.3007	1.0000e-005	0.0000	0.3010
Worker	1.9000e-004	1.4000e-004	1.4400e-003	0.0000	4.6000e-004	0.0000	4.6000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.3911	0.3911	1.0000e-005	0.0000	0.3913
Total	**2.4000e-004**	**1.4500e-003**	**1.7900e-003**	**0.0000**	**5.4000e-004**	**1.0000e-005**	**5.4000e-004**	**1.4000e-004**	**1.0000e-005**	**1.5000e-004**	**0.0000**	**0.6918**	**0.6918**	**2.0000e-005**	**0.0000**	**0.6923**

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					2.7400e-003	0.0000	2.7400e-003	1.5000e-004	0.0000	1.5000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.7400e-003	0.0560	0.0674	1.1000e-004		2.7700e-003	2.7700e-003		2.7700e-003	2.7700e-003	0.0000	9.8430	9.8430	3.1800e-003	0.0000	9.9226
Total	**2.7400e-003**	**0.0560**	**0.0674**	**1.1000e-004**	**2.7400e-003**	**2.7700e-003**	**5.5100e-003**	**1.5000e-004**	**2.7700e-003**	**2.9200e-003**	**0.0000**	**9.8430**	**9.8430**	**3.1800e-003**	**0.0000**	**9.9226**

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	5.0000e-005	1.3100e-003	3.5000e-004	0.0000	8.0000e-005	1.0000e-005	8.0000e-005	2.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.3007	0.3007	1.0000e-005	0.0000	0.3010
Worker	1.9000e-004	1.4000e-004	1.4400e-003	0.0000	4.6000e-004	0.0000	4.6000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.3911	0.3911	1.0000e-005	0.0000	0.3913
Total	**2.4000e-004**	**1.4500e-003**	**1.7900e-003**	**0.0000**	**5.4000e-004**	**1.0000e-005**	**5.4000e-004**	**1.4000e-004**	**1.0000e-005**	**1.5000e-004**	**0.0000**	**0.6918**	**0.6918**	**2.0000e-005**	**0.0000**	**0.6923**

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					0.0158	0.0000	0.0158	8.6900e-003	0.0000	8.6900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0182	0.1653	0.1601	2.5000e-004		9.8100e-003	9.8100e-003		9.3600e-003	9.3600e-003	0.0000	21.8558	21.8558	4.1300e-003	0.0000	21.9591
Total	**0.0182**	**0.1653**	**0.1601**	**2.5000e-004**	**0.0158**	**9.8100e-003**	**0.0256**	**8.6900e-003**	**9.3600e-003**	**0.0181**	**0.0000**	**21.8558**	**21.8558**	**4.1300e-003**	**0.0000**	**21.9591**

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	6.5700e-003	0.2295	0.0470	6.2000e-004	0.0134	7.5000e-004	0.0142	3.6900e-003	7.1000e-004	4.4000e-003	0.0000	60.3302	60.3302	2.7600e-003	0.0000	60.3992
Vendor	8.0000e-005	2.3900e-003	6.4000e-004	1.0000e-005	1.4000e-004	1.0000e-005	1.5000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.5490	0.5490	3.0000e-005	0.0000	0.5497
Worker	7.0000e-004	5.0000e-004	5.2600e-003	2.0000e-005	1.6700e-003	1.0000e-005	1.6800e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.4283	1.4283	4.0000e-005	0.0000	1.4292
Total	**7.3500e-003**	**0.2324**	**0.0529**	**6.5000e-004**	**0.0152**	**7.7000e-004**	**0.0160**	**4.1700e-003**	**7.3000e-004**	**4.9000e-003**	**0.0000**	**62.3075**	**62.3075**	**2.8300e-003**	**0.0000**	**62.3781**

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					7.1100e-003	0.0000	7.1100e-003	1.9600e-003	0.0000	1.9600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.5700e-003	0.1253	0.1667	2.5000e-004		8.4400e-003	8.4400e-003		8.4400e-003	8.4400e-003	0.0000	21.8558	21.8558	4.1300e-003	0.0000	21.9591
Total	**5.5700e-003**	**0.1253**	**0.1667**	**2.5000e-004**	**7.1100e-003**	**8.4400e-003**	**0.0156**	**1.9600e-003**	**8.4400e-003**	**0.0104**	**0.0000**	**21.8558**	**21.8558**	**4.1300e-003**	**0.0000**	**21.9591**

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	6.5700e-003	0.2295	0.0470	6.2000e-004	0.0134	7.5000e-004	0.0142	3.6900e-003	7.1000e-004	4.4000e-003	0.0000	60.3302	60.3302	2.7600e-003	0.0000	60.3992
Vendor	8.0000e-005	2.3900e-003	6.4000e-004	1.0000e-005	1.4000e-004	1.0000e-005	1.5000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.5490	0.5490	3.0000e-005	0.0000	0.5497

Worker	7.0000e-004	5.0000e-004	5.2600e-003	2.0000e-005	1.6700e-003	1.0000e-005	1.6800e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.4283	1.4283	4.0000e-005	0.0000	1.4292
Total	**7.3500e-003**	**0.2324**	**0.0529**	**6.5000e-004**	**0.0152**	**7.7000e-004**	**0.0160**	**4.1700e-003**	**7.3000e-004**	**4.9000e-003**	**0.0000**	**62.3075**	**62.3075**	**2.8300e-003**	**0.0000**	**62.3781**

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	0.0223	0.2219	0.2725	4.1000e-004		0.0123	0.0123		0.0113	0.0113	0.0000	35.6919	35.6919	0.0115	0.0000	35.9805
Total	**0.0223**	**0.2219**	**0.2725**	**4.1000e-004**		**0.0123**	**0.0123**		**0.0113**	**0.0113**	**0.0000**	**35.6919**	**35.6919**	**0.0115**	**0.0000**	**35.9805**

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	2.6000e-004	7.4600e-003	1.9900e-003	2.0000e-005	4.3000e-004	4.0000e-005	4.7000e-004	1.2000e-004	4.0000e-005	1.6000e-004	0.0000	1.7125	1.7125	8.0000e-005	0.0000	1.7144
Worker	1.0900e-003	7.8000e-004	8.2000e-003	2.0000e-005	2.6000e-003	2.0000e-005	2.6100e-003	6.9000e-004	2.0000e-005	7.1000e-004	0.0000	2.2275	2.2275	5.0000e-005	0.0000	2.2289
Total	**1.3500e-003**	**8.2400e-003**	**0.0102**	**4.0000e-005**	**3.0300e-003**	**6.0000e-005**	**3.0800e-003**	**8.1000e-004**	**6.0000e-005**	**8.7000e-004**	**0.0000**	**3.9399**	**3.9399**	**1.3000e-004**	**0.0000**	**3.9433**

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	9.9700e-003	0.2059	0.3075	4.1000e-004		0.0118	0.0118		0.0118	0.0118	0.0000	35.6918	35.6918	0.0115	0.0000	35.9804
Total	**9.9700e-003**	**0.2059**	**0.3075**	**4.1000e-004**		**0.0118**	**0.0118**		**0.0118**	**0.0118**	**0.0000**	**35.6918**	**35.6918**	**0.0115**	**0.0000**	**35.9804**

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	2.6000e-004	7.4600e-003	1.9900e-003	2.0000e-005	4.3000e-004	4.0000e-005	4.7000e-004	1.2000e-004	4.0000e-005	1.6000e-004	0.0000	1.7125	1.7125	8.0000e-005	0.0000	1.7144
Worker	1.0900e-003	7.8000e-004	8.2000e-003	2.0000e-005	2.6000e-003	2.0000e-005	2.6100e-003	6.9000e-004	2.0000e-005	7.1000e-004	0.0000	2.2275	2.2275	5.0000e-005	0.0000	2.2289
Total	**1.3500e-003**	**8.2400e-003**	**0.0102**	**4.0000e-005**	**3.0300e-003**	**6.0000e-005**	**3.0800e-003**	**8.1000e-004**	**6.0000e-005**	**8.7000e-004**	**0.0000**	**3.9399**	**3.9399**	**1.3000e-004**	**0.0000**	**3.9433**

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	0.0569	0.5843	0.4876	7.5000e-004		0.0345	0.0345		0.0317	0.0317	0.0000	66.0399	66.0399	0.0214	0.0000	66.5739
Total	**0.0569**	**0.5843**	**0.4876**	**7.5000e-004**		**0.0345**	**0.0345**		**0.0317**	**0.0317**	**0.0000**	**66.0399**	**66.0399**	**0.0214**	**0.0000**	**66.5739**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3300e-003	0.0464	9.5100e-003	1.3000e-004	2.7100e-003	1.5000e-004	2.8600e-003	7.5000e-004	1.4000e-004	8.9000e-004	0.0000	12.2033	12.2033	5.6000e-004	0.0000	12.2173
Vendor	3.1400e-003	0.0902	0.0240	2.2000e-004	5.2100e-003	4.5000e-004	5.6600e-003	1.5100e-003	4.3000e-004	1.9300e-003	0.0000	20.7063	20.7063	9.5000e-004	0.0000	20.7300
Worker	0.0105	7.5600e-003	0.0793	2.4000e-004	0.0251	1.6000e-004	0.0253	6.6800e-003	1.5000e-004	6.8300e-003	0.0000	21.5471	21.5471	5.3000e-004	0.0000	21.5604
Total	**0.0150**	**0.1442**	**0.1128**	**5.9000e-004**	**0.0331**	**7.6000e-004**	**0.0338**	**8.9400e-003**	**7.2000e-004**	**9.6500e-003**	**0.0000**	**54.4567**	**54.4567**	**2.0400e-003**	**0.0000**	**54.5076**

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	0.0184	0.4046	0.5255	7.5000e-004		0.0254	0.0254		0.0254	0.0254	0.0000	66.0398	66.0398	0.0214	0.0000	66.5738
Total	**0.0184**	**0.4046**	**0.5255**	**7.5000e-004**		**0.0254**	**0.0254**		**0.0254**	**0.0254**	**0.0000**	**66.0398**	**66.0398**	**0.0214**	**0.0000**	**66.5738**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3300e-003	0.0464	9.5100e-003	1.3000e-004	2.7100e-003	1.5000e-004	2.8600e-003	7.5000e-004	1.4000e-004	8.9000e-004	0.0000	12.2033	12.2033	5.6000e-004	0.0000	12.2173
Vendor	3.1400e-003	0.0902	0.0240	2.2000e-004	5.2100e-003	4.5000e-004	5.6600e-003	1.5100e-003	4.3000e-004	1.9300e-003	0.0000	20.7063	20.7063	9.5000e-004	0.0000	20.7300
Worker	0.0105	7.5600e-003	0.0793	2.4000e-004	0.0251	1.6000e-004	0.0253	6.6800e-003	1.5000e-004	6.8300e-003	0.0000	21.5471	21.5471	5.3000e-004	0.0000	21.5604
Total	**0.0150**	**0.1442**	**0.1128**	**5.9000e-004**	**0.0331**	**7.6000e-004**	**0.0338**	**8.9400e-003**	**7.2000e-004**	**9.6500e-003**	**0.0000**	**54.4567**	**54.4567**	**2.0400e-003**	**0.0000**	**54.5076**

3.7 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1415					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.3300e-003	0.0370	0.0403	7.0000e-005		2.4400e-003	2.4400e-003		2.4400e-003	2.4400e-003	0.0000	5.6172	5.6172	4.3000e-004	0.0000	5.6280
Total	**0.1468**	**0.0370**	**0.0403**	**7.0000e-005**		**2.4400e-003**	**2.4400e-003**		**2.4400e-003**	**2.4400e-003**	**0.0000**	**5.6172**	**5.6172**	**4.3000e-004**	**0.0000**	**5.6280**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.3000e-004	5.3000e-004	5.5100e-003	2.0000e-005	1.7400e-003	1.0000e-005	1.7600e-003	4.6000e-004	1.0000e-005	4.7000e-004	0.0000	1.4963	1.4963	4.0000e-005	0.0000	1.4973
Total	**7.3000e-004**	**5.3000e-004**	**5.5100e-003**	**2.0000e-005**	**1.7400e-003**	**1.0000e-005**	**1.7600e-003**	**4.6000e-004**	**1.0000e-005**	**4.7000e-004**	**0.0000**	**1.4963**	**1.4963**	**4.0000e-005**	**0.0000**	**1.4973**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1415					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.3100e-003	0.0299	0.0403	7.0000e-005		2.0900e-003	2.0900e-003		2.0900e-003	2.0900e-003	0.0000	5.6172	5.6172	4.3000e-004	0.0000	5.6280
Total	**0.1428**	**0.0299**	**0.0403**	**7.0000e-005**		**2.0900e-003**	**2.0900e-003**		**2.0900e-003**	**2.0900e-003**	**0.0000**	**5.6172**	**5.6172**	**4.3000e-004**	**0.0000**	**5.6280**

Mitigated Construction Off-Site

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

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.3000e-004	5.3000e-004	5.5100e-003	2.0000e-005	1.7400e-003	1.0000e-005	1.7600e-003	4.6000e-004	1.0000e-005	4.7000e-004	0.0000	1.4963	1.4963	4.0000e-005	0.0000	1.4973
Total	**7.3000e-004**	**5.3000e-004**	**5.5100e-003**	**2.0000e-005**	**1.7400e-003**	**1.0000e-005**	**1.7600e-003**	**4.6000e-004**	**1.0000e-005**	**4.7000e-004**	**0.0000**	**1.4963**	**1.4963**	**4.0000e-005**	**0.0000**	**1.4973**

3.7 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	0.3441					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0117	0.0817	0.0972	1.6000e-004		5.0300e-003	5.0300e-003		5.0300e-003	5.0300e-003	0.0000	13.6599	13.6599	9.4000e-004	0.0000	13.6833
Total	**0.3558**	**0.0817**	**0.0972**	**1.6000e-004**		**5.0300e-003**	**5.0300e-003**		**5.0300e-003**	**5.0300e-003**	**0.0000**	**13.6599**	**13.6599**	**9.4000e-004**	**0.0000**	**13.6833**

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	1.6500e-003	1.1400e-003	0.0122	4.0000e-005	4.2400e-003	3.0000e-005	4.2700e-003	1.1300e-003	2.0000e-005	1.1500e-003	0.0000	3.5125	3.5125	8.0000e-005	0.0000	3.5145

Total	**1.6500e-003**	**1.1400e-003**	**0.0122**	**4.0000e-005**	**4.2400e-003**	**3.0000e-005**	**4.2700e-003**	**1.1300e-003**	**2.0000e-005**	**1.1500e-003**	**0.0000**	**3.5125**	**3.5125**	**8.0000e-005**	**0.0000**	**3.5145**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3441					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.1800e-003	0.0726	0.0980	1.6000e-004		5.0900e-003	5.0900e-003		5.0900e-003	5.0900e-003	0.0000	13.6599	13.6599	9.4000e-004	0.0000	13.6833
Total	**0.3473**	**0.0726**	**0.0980**	**1.6000e-004**		**5.0900e-003**	**5.0900e-003**		**5.0900e-003**	**5.0900e-003**	**0.0000**	**13.6599**	**13.6599**	**9.4000e-004**	**0.0000**	**13.6833**

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	1.6500e-003	1.1400e-003	0.0122	4.0000e-005	4.2400e-003	3.0000e-005	4.2700e-003	1.1300e-003	2.0000e-005	1.1500e-003	0.0000	3.5125	3.5125	8.0000e-005	0.0000	3.5145
Total	**1.6500e-003**	**1.1400e-003**	**0.0122**	**4.0000e-005**	**4.2400e-003**	**3.0000e-005**	**4.2700e-003**	**1.1300e-003**	**2.0000e-005**	**1.1500e-003**	**0.0000**	**3.5125**	**3.5125**	**8.0000e-005**	**0.0000**	**3.5145**

3.8 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	0.0310	0.2889	0.3049	4.8000e-004		0.0152	0.0152		0.0141	0.0141	0.0000	40.3876	40.3876	0.0118	0.0000	40.6817
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0310**	**0.2889**	**0.3049**	**4.8000e-004**		**0.0152**	**0.0152**		**0.0141**	**0.0141**	**0.0000**	**40.3876**	**40.3876**	**0.0118**	**0.0000**	**40.6817**

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	5.0000e-005	1.8700e-003	4.1000e-004	1.0000e-005	1.2000e-004	1.0000e-005	1.2000e-004	3.0000e-005	1.0000e-005	4.0000e-005	0.0000	0.5271	0.5271	2.0000e-005	0.0000	0.5277
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3800e-003	1.6500e-003	0.0177	6.0000e-005	6.1400e-003	4.0000e-005	6.1800e-003	1.6300e-003	4.0000e-005	1.6700e-003	0.0000	5.0816	5.0816	1.2000e-004	0.0000	5.0845
Total	**2.4300e-003**	**3.5200e-003**	**0.0181**	**7.0000e-005**	**6.2600e-003**	**5.0000e-005**	**6.3000e-003**	**1.6600e-003**	**5.0000e-005**	**1.7100e-003**	**0.0000**	**5.6088**	**5.6088**	**1.4000e-004**	**0.0000**	**5.6122**

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	9.6300e-003	0.2046	0.2968	4.8000e-004		0.0125	0.0125		0.0125	0.0125	0.0000	40.3876	40.3876	0.0118	0.0000	40.6817
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.6300e-003**	**0.2046**	**0.2968**	**4.8000e-004**		**0.0125**	**0.0125**		**0.0125**	**0.0125**	**0.0000**	**40.3876**	**40.3876**	**0.0118**	**0.0000**	**40.6817**

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	5.0000e-005	1.8700e-003	4.1000e-004	1.0000e-005	1.2000e-004	1.0000e-005	1.2000e-004	3.0000e-005	1.0000e-005	4.0000e-005	0.0000	0.5271	0.5271	2.0000e-005	0.0000	0.5277
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3800e-003	1.6500e-003	0.0177	6.0000e-005	6.1400e-003	4.0000e-005	6.1800e-003	1.6300e-003	4.0000e-005	1.6700e-003	0.0000	5.0816	5.0816	1.2000e-004	0.0000	5.0845
Total	**2.4300e-003**	**3.5200e-003**	**0.0181**	**7.0000e-005**	**6.2600e-003**	**5.0000e-005**	**6.3000e-003**	**1.6600e-003**	**5.0000e-005**	**1.7100e-003**	**0.0000**	**5.6088**	**5.6088**	**1.4000e-004**	**0.0000**	**5.6122**

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	0.0555	0.2351	0.6446	2.2300e-003	0.2054	1.8900e-003	0.2073	0.0550	1.7700e-003	0.0568	0.0000	203.9952	203.9952	6.8900e-003	0.0000	204.1676
Unmitigated	0.0555	0.2351	0.6446	2.2300e-003	0.2054	1.8900e-003	0.2073	0.0550	1.7700e-003	0.0568	0.0000	203.9952	203.9952	6.8900e-003	0.0000	204.1676

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	244.80	234.90	215.55	552,475	552,475
Enclosed Parking with Elevator	0.00	0.00	0.00		
Total	244.80	234.90	215.55	552,475	552,475

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

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

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	53.4808	53.4808	5.3500e-003	1.1100e-003	53.9442
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	53.4808	53.4808	5.3500e-003	1.1100e-003	53.9442
NaturalGas Mitigated	2.1000e-003	0.0179	7.6200e-003	1.1000e-004		1.4500e-003	1.4500e-003		1.4500e-003	1.4500e-003	0.0000	20.7465	20.7465	4.0000e-004	3.8000e-004	20.8698
NaturalGas Unmitigated	2.1000e-003	0.0179	7.6200e-003	1.1000e-004		1.4500e-003	1.4500e-003		1.4500e-003	1.4500e-003	0.0000	20.7465	20.7465	4.0000e-004	3.8000e-004	20.8698

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	388775	2.1000e-003	0.0179	7.6200e-003	1.1000e-004		1.4500e-003	1.4500e-003		1.4500e-003	1.4500e-003	0.0000	20.7465	20.7465	4.0000e-004	3.8000e-004	20.8698
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
Total		**2.1000e-003**	**0.0179**	**7.6200e-003**	**1.1000e-004**		**1.4500e-003**	**1.4500e-003**		**1.4500e-003**	**1.4500e-003**	**0.0000**	**20.7465**	**20.7465**	**4.0000e-004**	**3.8000e-004**	**20.8698**

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	388775	2.1000e-003	0.0179	7.6200e-003	1.1000e-004		1.4500e-003	1.4500e-003		1.4500e-003	1.4500e-003	0.0000	20.7465	20.7465	4.0000e-004	3.8000e-004	20.8698

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
Total		**2.1000e-003**	**0.0179**	**7.6200e-003**	**1.1000e-004**		**1.4500e-003**	**1.4500e-003**		**1.4500e-003**	**1.4500e-003**	**0.0000**	**20.7465**	**20.7465**	**4.0000e-004**	**3.8000e-004**	**20.8698**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	185776	24.4373	2.4400e-003	5.1000e-004	24.6490
Enclosed Parking with Elevator	220793	29.0435	2.9000e-003	6.0000e-004	29.2952
Total		**53.4808**	**5.3400e-003**	**1.1100e-003**	**53.9442**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	185776	24.4373	2.4400e-003	5.1000e-004	24.6490
Enclosed Parking with Elevator	220793	29.0435	2.9000e-003	6.0000e-004	29.2952
Total		**53.4808**	**5.3400e-003**	**1.1100e-003**	**53.9442**

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	0.3264	5.4200e-003	0.3359	3.0000e-005		1.9800e-003	1.9800e-003		1.9800e-003	1.9800e-003	0.0000	2.3450	2.3450	5.6000e-004	3.0000e-005	2.3689
Unmitigated	0.3264	5.4200e-003	0.3359	3.0000e-005		1.9800e-003	1.9800e-003		1.9800e-003	1.9800e-003	0.0000	2.3450	2.3450	5.6000e-004	3.0000e-005	2.3689

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	0.0486					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2675					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.8000e-004	1.5500e-003	6.6000e-004	1.0000e-005		1.3000e-004	1.3000e-004		1.3000e-004	1.3000e-004	0.0000	1.7977	1.7977	3.0000e-005	3.0000e-005	1.8084
Landscaping	0.0102	3.8600e-003	0.3353	2.0000e-005		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003	0.0000	0.5473	0.5473	5.3000e-004	0.0000	0.5606
Total	**0.3264**	**5.4100e-003**	**0.3359**	**3.0000e-005**		**1.9800e-003**	**1.9800e-003**		**1.9800e-003**	**1.9800e-003**	**0.0000**	**2.3450**	**2.3450**	**5.6000e-004**	**3.0000e-005**	**2.3689**

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	0.0486					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2675					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.8000e-004	1.5500e-003	6.6000e-004	1.0000e-005		1.3000e-004	1.3000e-004		1.3000e-004	1.3000e-004	0.0000	1.7977	1.7977	3.0000e-005	3.0000e-005	1.8084
Landscaping	0.0102	3.8600e-003	0.3353	2.0000e-005		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003	0.0000	0.5473	0.5473	5.3000e-004	0.0000	0.5606
Total	**0.3264**	**5.4100e-003**	**0.3359**	**3.0000e-005**		**1.9800e-003**	**1.9800e-003**		**1.9800e-003**	**1.9800e-003**	**0.0000**	**2.3450**	**2.3450**	**5.6000e-004**	**3.0000e-005**	**2.3689**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	3.9752	3.8600e-003	2.3200e-003	4.7621
Unmitigated	3.9752	3.8600e-003	2.3200e-003	4.7621

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	2.93193 / 1.84839	3.9752	3.8600e-003	2.3200e-003	4.7621
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**3.9752**	**3.8600e-003**	**2.3200e-003**	**4.7621**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	2.93193 / 1.84839	3.9752	3.8600e-003	2.3200e-003	4.7621
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**3.9752**	**3.8600e-003**	**2.3200e-003**	**4.7621**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	4.2019	0.2483	0.0000	10.4101
Unmitigated	4.2019	0.2483	0.0000	10.4101

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	20.7	4.2019	0.2483	0.0000	10.4101
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Total		**4.2019**	**0.2483**	**0.0000**	**10.4101**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	20.7	4.2019	0.2483	0.0000	10.4101
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000

Total		**4.2019**	**0.2483**	**0.0000**	**10.4101**

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

19-049 4350 ECR Los Altos - Construction

Santa Clara County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking with Elevator	84.00	Space	0.00	37,678.00	0
Apartments Mid Rise	45.00	Dwelling Unit	0.66	67,862.00	129

1.2 Other Project Characteristics

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 290

Land Use - Land Use from Project Applicant Construction Sheet

Construction Phase - Project Applicant provided construction schedule, used total workdays per phase

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - Default construction equipment per discussion with applicant

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - Default trenching equipment per discussion with project applicant

Trips and VMT - Water truck trips assumed, 90-tons of pavement demoed = 18 one-way trips, 160 round-trip cement truck trips, 16-cy of asphalt = 14 one way trips for paving, TAC 1 mile length for localized emissions

Demolition - Demo of 28,500-sf

Grading - import 16,000-cy of soil during grading

Vehicle Trips - weekday trip rate = 5.44, saturday trip rate = 5.22, sunday trip rate = 4.79

Woodstoves - Assuming no wood burning, all gas

Energy Use -

Water And Wastewater - 100% aerobic to account for wastewater treatment plants

Construction Off-road Equipment Mitigation - BMPs, Tier 3 DPF 3 for all other equipment except for site prep/grading equipment that would use Tier 4 interim mitigation, electric equipment for portable equipment

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	FuelType	Diesel	Electrical
tblConstEquipMitigation	FuelType	Diesel	Electrical
tblConstEquipMitigation	FuelType	Diesel	Electrical
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	Tier	No Change	Tier 3

tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	5.00	151.00
tblConstructionPhase	NumDays	100.00	132.00
tblConstructionPhase	NumDays	10.00	23.00
tblConstructionPhase	NumDays	2.00	42.00
tblConstructionPhase	NumDays	5.00	86.00
tblConstructionPhase	NumDays	1.00	23.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	6.75	14.40
tblFireplaces	NumberWood	7.65	0.00
tblGrading	MaterialImported	0.00	16,000.00
tblLandUse	LandUseSquareFeet	33,600.00	37,678.00
tblLandUse	LandUseSquareFeet	45,000.00	67,862.00
tblLandUse	LotAcreage	0.76	0.00
tblLandUse	LotAcreage	1.18	0.66
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	HaulingTripNumber	130.00	148.00

tblTripsAndVMT	HaulingTripNumber	0.00	320.00
tblTripsAndVMT	HaulingTripNumber	0.00	14.00
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	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	11.00	12.00
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
tblVehicleTrips	ST_TR	6.39	5.22
tblVehicleTrips	SU_TR	5.86	4.79
tblVehicleTrips	WD_TR	6.65	5.44
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	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	0.2706	1.3641	1.1561	1.9700e-003	0.0407	0.0685	0.1092	0.0128	0.0637	0.0765	0.0000	174.8988	174.8988	0.0452	0.0000	176.0283
2021	0.3882	0.3718	0.4100	6.6000e-004	9.8000e-004	0.0202	0.0212	2.6000e-004	0.0192	0.0194	0.0000	55.1658	55.1658	0.0128	0.0000	55.4846
Maximum	**0.3882**	**1.3641**	**1.1561**	**1.9700e-003**	**0.0407**	**0.0685**	**0.1092**	**0.0128**	**0.0637**	**0.0765**	**0.0000**	**174.8988**	**174.8988**	**0.0452**	**0.0000**	**176.0283**

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	0.1804	0.8190	1.0939	1.9700e-003	0.0209	3.5000e-003	0.0244	3.8900e-003	3.4900e-003	7.3800e-003	0.0000	151.8076	151.8076	0.0436	0.0000	152.8986
2021	0.3548	0.1916	0.3047	6.6000e-004	9.8000e-004	1.3900e-003	2.3700e-003	2.6000e-004	1.3900e-003	1.6500e-003	0.0000	35.5941	35.5941	0.0112	0.0000	35.8741
Maximum	**0.3548**	**0.8190**	**1.0939**	**1.9700e-003**	**0.0209**	**3.5000e-003**	**0.0244**	**3.8900e-003**	**3.4900e-003**	**7.3800e-003**	**0.0000**	**151.8076**	**151.8076**	**0.0436**	**0.0000**	**152.8986**

	ROG	NOx	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	**18.75**	**41.79**	**10.70**	**0.00**	**47.41**	**94.49**	**79.44**	**68.17**	**94.11**	**90.59**	**0.00**	**18.54**	**18.54**	**5.33**	**0.00**	**18.46**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2020	3-31-2020	0.4862	0.2199
2	4-1-2020	6-30-2020	0.1237	0.0943
3	7-1-2020	9-30-2020	0.4828	0.3191
4	10-1-2020	12-31-2020	0.5393	0.3633
5	1-1-2021	3-31-2021	0.4210	0.3060
6	4-1-2021	6-30-2021	0.3416	0.2426
		Highest	0.5393	0.3633

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2020	2/1/2020	5	23	
2	Site Preparation	Site Preparation	1/1/2020	2/1/2020	5	23	
3	Grading	Grading	2/1/2020	3/31/2020	5	42	
4	Trenching	Trenching	4/1/2020	9/30/2020	5	131	
5	Building Construction	Building Construction	7/1/2020	12/31/2020	5	132	
6	Architectural Coating	Architectural Coating	11/1/2020	5/31/2021	5	151	
7	Paving	Paving	2/1/2021	5/31/2021	5	86	

Acres of Grading (Site Preparation Phase): 11.5

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 137,421; Residential Outdoor: 45,807; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area:

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	Rubber Tired Dozers	1	1.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Trenching	Excavators	1	6.00	158	0.38
Trenching	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37

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	4	10.00	1.00	148.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	5.00	1.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	1.00	1,582.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Trenching	2	5.00	1.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	48.00	12.00	320.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	10.00	0.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	14.00	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					0.0140	0.0000	0.0140	2.1200e-003	0.0000	2.1200e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.9700e-003	0.0905	0.0877	1.4000e-004		5.3700e-003	5.3700e-003		5.1300e-003	5.1300e-003	0.0000	11.9687	11.9687	2.2600e-003	0.0000	12.0253
Total	**9.9700e-003**	**0.0905**	**0.0877**	**1.4000e-004**	**0.0140**	**5.3700e-003**	**0.0194**	**2.1200e-003**	**5.1300e-003**	**7.2500e-003**	**0.0000**	**11.9687**	**11.9687**	**2.2600e-003**	**0.0000**	**12.0253**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.6000e-004	7.6300e-003	1.2500e-003	1.0000e-005	6.0000e-005	1.0000e-005	7.0000e-005	2.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.9611	0.9611	1.0000e-004	0.0000	0.9637
Vendor	2.0000e-005	7.7000e-004	2.1000e-004	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0923	0.0923	1.0000e-005	0.0000	0.0925

Worker	1.3000e-004	6.0000e-005	7.5000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0935	0.0935	0.0000	0.0000	0.0936
Total	**3.1000e-004**	**8.4600e-003**	**2.2100e-003**	**1.0000e-005**	**1.6000e-004**	**1.0000e-005**	**1.7000e-004**	**4.0000e-005**	**1.0000e-005**	**4.0000e-005**	**0.0000**	**1.1470**	**1.1470**	**1.1000e-004**	**0.0000**	**1.1498**

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					6.3100e-003	0.0000	6.3100e-003	4.8000e-004	0.0000	4.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.5000e-003	0.0292	0.0469	1.4000e-004		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	5.7856	5.7856	1.8700e-003	0.0000	5.8324
Total	**1.5000e-003**	**0.0292**	**0.0469**	**1.4000e-004**	**6.3100e-003**	**1.2000e-004**	**6.4300e-003**	**4.8000e-004**	**1.2000e-004**	**6.0000e-004**	**0.0000**	**5.7856**	**5.7856**	**1.8700e-003**	**0.0000**	**5.8324**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.6000e-004	7.6300e-003	1.2500e-003	1.0000e-005	6.0000e-005	1.0000e-005	7.0000e-005	2.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.9611	0.9611	1.0000e-004	0.0000	0.9637
Vendor	2.0000e-005	7.7000e-004	2.1000e-004	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0923	0.0923	1.0000e-005	0.0000	0.0925
Worker	1.3000e-004	6.0000e-005	7.5000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0935	0.0935	0.0000	0.0000	0.0936
Total	**3.1000e-004**	**8.4600e-003**	**2.2100e-003**	**1.0000e-005**	**1.6000e-004**	**1.0000e-005**	**1.7000e-004**	**4.0000e-005**	**1.0000e-005**	**4.0000e-005**	**0.0000**	**1.1470**	**1.1470**	**1.1000e-004**	**0.0000**	**1.1498**

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					6.1000e-003	0.0000	6.1000e-003	6.6000e-004	0.0000	6.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.8800e-003	0.0970	0.0471	1.1000e-004		3.8600e-003	3.8600e-003		3.5500e-003	3.5500e-003	0.0000	9.8431	9.8431	3.1800e-003	0.0000	9.9226
Total	**7.8800e-003**	**0.0970**	**0.0471**	**1.1000e-004**	**6.1000e-003**	**3.8600e-003**	**9.9600e-003**	**6.6000e-004**	**3.5500e-003**	**4.2100e-003**	**0.0000**	**9.8431**	**9.8431**	**3.1800e-003**	**0.0000**	**9.9226**

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	2.0000e-005	7.7000e-004	2.1000e-004	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0923	0.0923	1.0000e-005	0.0000	0.0925
Worker	6.0000e-005	3.0000e-005	3.8000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0468	0.0468	0.0000	0.0000	0.0468
Total	**8.0000e-005**	**8.0000e-004**	**5.9000e-004**	**0.0000**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.1391**	**0.1391**	**1.0000e-005**	**0.0000**	**0.1394**

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					2.7400e-003	0.0000	2.7400e-003	1.5000e-004	0.0000	1.5000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0400e-003	0.0356	0.0674	1.1000e-004		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004	0.0000	9.8430	9.8430	3.1800e-003	0.0000	9.9226
Total	**2.0400e-003**	**0.0356**	**0.0674**	**1.1000e-004**	**2.7400e-003**	**1.8000e-004**	**2.9200e-003**	**1.5000e-004**	**1.8000e-004**	**3.3000e-004**	**0.0000**	**9.8430**	**9.8430**	**3.1800e-003**	**0.0000**	**9.9226**

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	2.0000e-005	7.7000e-004	2.1000e-004	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0923	0.0923	1.0000e-005	0.0000	0.0925
Worker	6.0000e-005	3.0000e-005	3.8000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0468	0.0468	0.0000	0.0000	0.0468
Total	**8.0000e-005**	**8.0000e-004**	**5.9000e-004**	**0.0000**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.1391**	**0.1391**	**1.0000e-005**	**0.0000**	**0.1394**

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					0.0158	0.0000	0.0158	8.6900e-003	0.0000	8.6900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0182	0.1653	0.1601	2.5000e-004		9.8100e-003	9.8100e-003		9.3600e-003	9.3600e-003	0.0000	21.8558	21.8558	4.1300e-003	0.0000	21.9591

Total	**0.0182**	**0.1653**	**0.1601**	**2.5000e-004**	**0.0158**	**9.8100e-003**	**0.0256**	**8.6900e-003**	**9.3600e-003**	**0.0181**	**0.0000**	**21.8558**	**21.8558**	**4.1300e-003**	**0.0000**	**21.9591**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.7200e-003	0.0816	0.0133	1.1000e-004	6.9000e-004	8.0000e-005	7.6000e-004	1.9000e-004	7.0000e-005	2.6000e-004	0.0000	10.2735	10.2735	1.0900e-003	0.0000	10.3008
Vendor	4.0000e-005	1.4000e-003	3.9000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1686	0.1686	2.0000e-005	0.0000	0.1690
Worker	2.3000e-004	1.1000e-004	1.3800e-003	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1708	0.1708	1.0000e-005	0.0000	0.1710
Total	**1.9900e-003**	**0.0831**	**0.0151**	**1.1000e-004**	**8.7000e-004**	**8.0000e-005**	**9.4000e-004**	**2.4000e-004**	**7.0000e-005**	**3.1000e-004**	**0.0000**	**10.6129**	**10.6129**	**1.1200e-003**	**0.0000**	**10.6408**

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					7.1100e-003	0.0000	7.1100e-003	1.9600e-003	0.0000	1.9600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.7400e-003	0.0533	0.0857	2.5000e-004		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004	0.0000	10.5650	10.5650	3.4200e-003	0.0000	10.6505
Total	**2.7400e-003**	**0.0533**	**0.0857**	**2.5000e-004**	**7.1100e-003**	**2.2000e-004**	**7.3300e-003**	**1.9600e-003**	**2.2000e-004**	**2.1800e-003**	**0.0000**	**10.5650**	**10.5650**	**3.4200e-003**	**0.0000**	**10.6505**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.7200e-003	0.0816	0.0133	1.1000e-004	6.9000e-004	8.0000e-005	7.6000e-004	1.9000e-004	7.0000e-005	2.6000e-004	0.0000	10.2735	10.2735	1.0900e-003	0.0000	10.3008
Vendor	4.0000e-005	1.4000e-003	3.9000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1686	0.1686	2.0000e-005	0.0000	0.1690
Worker	2.3000e-004	1.1000e-004	1.3800e-003	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1708	0.1708	1.0000e-005	0.0000	0.1710
Total	**1.9900e-003**	**0.0831**	**0.0151**	**1.1000e-004**	**8.7000e-004**	**8.0000e-005**	**9.4000e-004**	**2.4000e-004**	**7.0000e-005**	**3.1000e-004**	**0.0000**	**10.6129**	**10.6129**	**1.1200e-003**	**0.0000**	**10.6408**

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	0.0223	0.2219	0.2725	4.1000e-004		0.0123	0.0123		0.0113	0.0113	0.0000	35.6919	35.6919	0.0115	0.0000	35.9805
Total	**0.0223**	**0.2219**	**0.2725**	**4.1000e-004**		**0.0123**	**0.0123**		**0.0113**	**0.0113**	**0.0000**	**35.6919**	**35.6919**	**0.0115**	**0.0000**	**35.9805**

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	1.2000e-004	4.3800e-003	1.2200e-003	1.0000e-005	6.0000e-005	1.0000e-005	7.0000e-005	2.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.5258	0.5258	5.0000e-005	0.0000	0.5271
Worker	3.6000e-004	1.7000e-004	2.1500e-003	0.0000	2.4000e-004	0.0000	2.5000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2663	0.2663	1.0000e-005	0.0000	0.2666
Total	**4.8000e-004**	**4.5500e-003**	**3.3700e-003**	**1.0000e-005**	**3.0000e-004**	**1.0000e-005**	**3.2000e-004**	**9.0000e-005**	**1.0000e-005**	**9.0000e-005**	**0.0000**	**0.7921**	**0.7921**	**6.0000e-005**	**0.0000**	**0.7937**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.5400e-003	0.1784	0.3075	4.1000e-004		6.6000e-004	6.6000e-004		6.6000e-004	6.6000e-004	0.0000	35.6918	35.6918	0.0115	0.0000	35.9804
Total	**6.5400e-003**	**0.1784**	**0.3075**	**4.1000e-004**		**6.6000e-004**	**6.6000e-004**		**6.6000e-004**	**6.6000e-004**	**0.0000**	**35.6918**	**35.6918**	**0.0115**	**0.0000**	**35.9804**

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	1.2000e-004	4.3800e-003	1.2200e-003	1.0000e-005	6.0000e-005	1.0000e-005	7.0000e-005	2.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.5258	0.5258	5.0000e-005	0.0000	0.5271
Worker	3.6000e-004	1.7000e-004	2.1500e-003	0.0000	2.4000e-004	0.0000	2.5000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2663	0.2663	1.0000e-005	0.0000	0.2666

Total	**4.8000e-004**	**4.5500e-003**	**3.3700e-003**	**1.0000e-005**	**3.0000e-004**	**1.0000e-005**	**3.2000e-004**	**9.0000e-005**	**1.0000e-005**	**9.0000e-005**	**0.0000**	**0.7921**	**0.7921**	**6.0000e-005**	**0.0000**	**0.7937**

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	0.0569	0.5843	0.4876	7.5000e-004		0.0345	0.0345		0.0317	0.0317	0.0000	66.0399	66.0399	0.0214	0.0000	66.5739
Total	**0.0569**	**0.5843**	**0.4876**	**7.5000e-004**		**0.0345**	**0.0345**		**0.0317**	**0.0317**	**0.0000**	**66.0399**	**66.0399**	**0.0214**	**0.0000**	**66.5739**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.5000e-004	0.0165	2.6900e-003	2.0000e-005	1.4000e-004	2.0000e-005	1.5000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	2.0781	2.0781	2.2000e-004	0.0000	2.0836
Vendor	1.5000e-003	0.0530	0.0147	7.0000e-005	7.3000e-004	9.0000e-005	8.2000e-004	2.1000e-004	8.0000e-005	3.0000e-004	0.0000	6.3580	6.3580	6.2000e-004	0.0000	6.3735
Worker	3.5100e-003	1.6100e-003	0.0208	3.0000e-005	2.3500e-003	3.0000e-005	2.3900e-003	6.3000e-004	3.0000e-005	6.6000e-004	0.0000	2.5762	2.5762	1.1000e-004	0.0000	2.5790
Total	**5.3600e-003**	**0.0711**	**0.0382**	**1.2000e-004**	**3.2200e-003**	**1.4000e-004**	**3.3600e-003**	**8.8000e-004**	**1.2000e-004**	**1.0100e-003**	**0.0000**	**11.0123**	**11.0123**	**9.5000e-004**	**0.0000**	**11.0361**

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	0.0176	0.3544	0.5255	7.5000e-004		2.0800e-003	2.0800e-003		2.0800e-003	2.0800e-003	0.0000	66.0398	66.0398	0.0214	0.0000	66.5738
Total	**0.0176**	**0.3544**	**0.5255**	**7.5000e-004**		**2.0800e-003**	**2.0800e-003**		**2.0800e-003**	**2.0800e-003**	**0.0000**	**66.0398**	**66.0398**	**0.0214**	**0.0000**	**66.5738**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.5000e-004	0.0165	2.6900e-003	2.0000e-005	1.4000e-004	2.0000e-005	1.5000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	2.0781	2.0781	2.2000e-004	0.0000	2.0836
Vendor	1.5000e-003	0.0530	0.0147	7.0000e-005	7.3000e-004	9.0000e-005	8.2000e-004	2.1000e-004	8.0000e-005	3.0000e-004	0.0000	6.3580	6.3580	6.2000e-004	0.0000	6.3735
Worker	3.5100e-003	1.6100e-003	0.0208	3.0000e-005	2.3500e-003	3.0000e-005	2.3900e-003	6.3000e-004	3.0000e-005	6.6000e-004	0.0000	2.5762	2.5762	1.1000e-004	0.0000	2.5790
Total	**5.3600e-003**	**0.0711**	**0.0382**	**1.2000e-004**	**3.2200e-003**	**1.4000e-004**	**3.3600e-003**	**8.8000e-004**	**1.2000e-004**	**1.0100e-003**	**0.0000**	**11.0123**	**11.0123**	**9.5000e-004**	**0.0000**	**11.0361**

3.7 Architectural Coating - 2020

Unmitigated Construction On-Site

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

Archit. Coating	0.1415					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.3300e-003	0.0370	0.0403	7.0000e-005		2.4400e-003	2.4400e-003		2.4400e-003	2.4400e-003	0.0000	5.6172	5.6172	4.3000e-004	0.0000	5.6280
Total	**0.1468**	**0.0370**	**0.0403**	**7.0000e-005**		**2.4400e-003**	**2.4400e-003**		**2.4400e-003**	**2.4400e-003**	**0.0000**	**5.6172**	**5.6172**	**4.3000e-004**	**0.0000**	**5.6280**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.4000e-004	1.1000e-004	1.4400e-003	0.0000	1.6000e-004	0.0000	1.7000e-004	4.0000e-005	0.0000	5.0000e-005	0.0000	0.1789	0.1789	1.0000e-005	0.0000	0.1791
Total	**2.4000e-004**	**1.1000e-004**	**1.4400e-003**	**0.0000**	**1.6000e-004**	**0.0000**	**1.7000e-004**	**4.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.1789**	**0.1789**	**1.0000e-005**	**0.0000**	**0.1791**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1415					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	7.0000e-005		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.1415**	**0.0000**	**0.0000**	**7.0000e-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	2.4000e-004	1.1000e-004	1.4400e-003	0.0000	1.6000e-004	0.0000	1.7000e-004	4.0000e-005	0.0000	5.0000e-005	0.0000	0.1789	0.1789	1.0000e-005	0.0000	0.1791
Total	**2.4000e-004**	**1.1000e-004**	**1.4400e-003**	**0.0000**	**1.6000e-004**	**0.0000**	**1.7000e-004**	**4.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.1789**	**0.1789**	**1.0000e-005**	**0.0000**	**0.1791**

3.7 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	0.3441					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0117	0.0817	0.0972	1.6000e-004		5.0300e-003	5.0300e-003		5.0300e-003	5.0300e-003	0.0000	13.6599	13.6599	9.4000e-004	0.0000	13.6833
Total	**0.3558**	**0.0817**	**0.0972**	**1.6000e-004**		**5.0300e-003**	**5.0300e-003**		**5.0300e-003**	**5.0300e-003**	**0.0000**	**13.6599**	**13.6599**	**9.4000e-004**	**0.0000**	**13.6833**

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	5.4000e-004	2.4000e-004	3.1600e-003	0.0000	4.0000e-004	1.0000e-005	4.0000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.4203	0.4203	2.0000e-005	0.0000	0.4207
Total	**5.4000e-004**	**2.4000e-004**	**3.1600e-003**	**0.0000**	**4.0000e-004**	**1.0000e-005**	**4.0000e-004**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.4203**	**0.4203**	**2.0000e-005**	**0.0000**	**0.4207**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3441					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	1.6000e-004		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.3441**	**0.0000**	**0.0000**	**1.6000e-004**		**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	5.4000e-004	2.4000e-004	3.1600e-003	0.0000	4.0000e-004	1.0000e-005	4.0000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.4203	0.4203	2.0000e-005	0.0000	0.4207
Total	**5.4000e-004**	**2.4000e-004**	**3.1600e-003**	**0.0000**	**4.0000e-004**	**1.0000e-005**	**4.0000e-004**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.4203**	**0.4203**	**2.0000e-005**	**0.0000**	**0.4207**

3.8 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	0.0310	0.2889	0.3049	4.8000e-004		0.0152	0.0152		0.0141	0.0141	0.0000	40.3876	40.3876	0.0118	0.0000	40.6817
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0310**	**0.2889**	**0.3049**	**4.8000e-004**		**0.0152**	**0.0152**		**0.0141**	**0.0141**	**0.0000**	**40.3876**	**40.3876**	**0.0118**	**0.0000**	**40.6817**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	6.9000e-004	1.1000e-004	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0900	0.0900	1.0000e-005	0.0000	0.0902
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8000e-004	3.5000e-004	4.5700e-003	1.0000e-005	5.8000e-004	1.0000e-005	5.8000e-004	1.5000e-004	1.0000e-005	1.6000e-004	0.0000	0.6081	0.6081	2.0000e-005	0.0000	0.6087
Total	**7.9000e-004**	**1.0400e-003**	**4.6800e-003**	**1.0000e-005**	**5.9000e-004**	**1.0000e-005**	**5.9000e-004**	**1.5000e-004**	**1.0000e-005**	**1.6000e-004**	**0.0000**	**0.6980**	**0.6980**	**3.0000e-005**	**0.0000**	**0.6988**

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	9.3900e-003	0.1903	0.2968	4.8000e-004		1.3800e-003	1.3800e-003		1.3800e-003	1.3800e-003	0.0000	34.4758	34.4758	0.0112	0.0000	34.7546
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.3900e-003**	**0.1903**	**0.2968**	**4.8000e-004**		**1.3800e-003**	**1.3800e-003**		**1.3800e-003**	**1.3800e-003**	**0.0000**	**34.4758**	**34.4758**	**0.0112**	**0.0000**	**34.7546**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	6.9000e-004	1.1000e-004	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0900	0.0900	1.0000e-005	0.0000	0.0902
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8000e-004	3.5000e-004	4.5700e-003	1.0000e-005	5.8000e-004	1.0000e-005	5.8000e-004	1.5000e-004	1.0000e-005	1.6000e-004	0.0000	0.6081	0.6081	2.0000e-005	0.0000	0.6087
Total	**7.9000e-004**	**1.0400e-003**	**4.6800e-003**	**1.0000e-005**	**5.9000e-004**	**1.0000e-005**	**5.9000e-004**	**1.5000e-004**	**1.0000e-005**	**1.6000e-004**	**0.0000**	**0.6980**	**0.6980**	**3.0000e-005**	**0.0000**	**0.6988**

Project Name:	**4350 ECR Los Altos**							**Complete ALL Portions in Yellow**
	See Equipment Type TAB for type, horsepower and load factor							
	Project Size	**47**	**Dwelling Units**	**0.656**	**total project acres disturbed**			
		67,862	**s.f. residential**					**Pile Driving - yes**
		N/A	**s.f. retail**					
		N/A	**s.f. office/commercial**					
		N/A	**s.f. other, specify:**					
		37,678	**s.f. parking garage**	**84**	**spaces**			
		N/A	**s.f. parking lot**	**N/A**	**spaces**			
	Construction Hours	**7:00**	**am to**	**4:00**	**pm**			
Qty	**Description**	**HP**	**Load Factor**	**Hours/day**	**Total Work Days**	**Avg. Hours per day**	**Annual Hours**	**Comments**
	Demolition	**Start Date:**	**1/1/2020**	**Total phase:**	**23**			**Overall Import/Export Volumes**
		End Date:	**2/1/2020**					
	Concrete/Industrial Saws	81	0.73			0	0	**Demolition Volume**
	Excavators	162	0.38			0	0	Square footage of buildings to be demolished
	Rubber-Tired Dozers	247	0.4			0	0	(*or* total tons to be hauled)
	Tractors/Loaders/Backhoes	97	0.37			0	0	**_28,500_** square feet *or*
								_n/a_ Hauling volume (tons)
	Site Preperation	**Start Date:**	**1/1/2020**	**Total phase:**	**23**			Any pavement demolished and hauled? **_90_ tons**
		End Date:	**2/1/2020**					
	Graders	187	0.41			0	0	
	Rubber-Tired Dozers	247	0.4			0	0	
	Tractors/Loaders/Backhoes	97	0.37			0	0	
	Grading / Excavation	**Start Date:**	**2/1/2020**	**Total phase:**	**42**			
		End Date:	**4/1/2020**					**Soil Hauling Volume**
	Excavators	162	0.38			0	0	Export volume = **_?** cubic yards?
	Graders	187	0.41			0	0	Import volume = **16,000** cubic yards?
	Rubber Tired Dozers	247	0.4			0	0	
	Tractors/Loaders/Backhoes	97	0.37			0	0	
	Other Equipment?							
	Trenching/Foundation	**Start Date:**	**4/1/2020**	**Total phase:**	**131**			
		End Date:	**10/1/2020**					
	Tractor/Loader/Backhoe	97	0.37			0	0	
	Excavators	162	0.38			0	0	
	Other Equipment?							
	Building - Exterior	**Start Date:**	**7/1/2020**	**Total phase:**	**132**			**Cement Trucks? _160_ Total Round-Trips**
		End Date:	**1/1/2021**					
	Cranes	231	0.29			0	0	Electric? (Y/N) _N__ Otherwise assumed diesel
	Forklifts	89	0.2			0	0	Liquid Propane (LPG)? (Y/N) _N__ Otherwise Assumed diesel
	Generator Sets	84	0.74			0	0	Or temporary line power? (Y/N) _Y
	Tractors/Loaders/Backhoes	97	0.37			0	0	otherwise, assume diesel generator
	Welders	46	0.45			0	0	
	Other Equipment?					0		
	Building - Interior/Architectural Coating	**Start Date:**	**11/1/2020**	**Total phase:**	**151**			
		End Date:	**6/1/2021**					
	Air Compressors	78	0.48			0	0	
	Aerial Lift	62	0.31			0	0	
	Other Equipment?							
	Paving	**Start Date:**	**2/1/2021**	**Total phase:**	**86**			
		End Date:	**6/1/2021**					
	Cement and Mortar Mixers	9	0.56			0	0	
	Pavers	130	0.42			0	0	**Asphalt? _100_ cubic yards or _n/a__ round trips?**
	Paving Equipment	132	0.36			0	0	
	Rollers	80	0.38			0	0	
	Tractors/Loaders/Backhoes	97	0.37			0	0	
	Other Equipment?							

Table 1
Project Trip Generation Estimates

Land Use	Size	Unit	Daily Rate	Daily Trips	AM Peak Hour Rate	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour Rate	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
Proposed Uses												
Mid-Rise Multifamily Housing[1]	45	DU	5.44	245	0.36	4	12	16	0.44	12	8	20
Existing Use												
Gasoline/Service Station[2]	12	FP	205.36	-2,464	12.47	-77	-73	-150	13.99	-86	-82	-168
- Pass-By Trip Reduction[3]				1,454		48	45	93		48	46	94
Net Existing Trips				*-1,010*		*-29*	*-28*	*-57*		*-38*	*-36*	*-74*
Net Project Trips				**-765**		**-25**	**-16**	**-41**		**-26**	**-28**	**-54**

Notes:
Trip rates for multifamily and gas station uses are from the ITE Trip Generation Manual, 10th Edition, 2017.
1. Mid-Rise Multifamily Housing (Land Use 221), average rates expressed in trips per dwelling unit (DU) are used.
2. Gasoline/Service Station (Land Use 945), average rates expressed in trips per vehicle fueling position (FP) are used.
3. Average pass-by trip reduction percentage of 62% in the AM peak hour and 56% in the PM peak hour is used. Daily reduction percentage is the average of AM and PM peak-hour percentage.

Site Access Analysis

The project proposes one driveway on El Camino Real. Thus, the project would eliminate two driveways on Los Altos Avenue and one driveway on El Camino Real. The reduction in driveways would benefit circulation in the area by reducing the number of potential conflict points and by reducing the potential delays caused by inbound vehicles. Also, the reduction in driveways would represent a safety benefit for pedestrians and bicycles.

The proposed driveway on El Camino Real is the best location for a driveway to the site because El Camino Real is a major arterial that can accommodate driveway traffic. Hexagon also considered the possibility of having a driveway to Los Altos Avenue. This driveway location would be problematic for a number of reasons. Los Altos Avenue is a residential street, and having a driveway there could encourage project traffic to use it. It would be better from the standpoint of residential impact to keep the traffic on El Camino Real. Also, a driveway on Los Altos Avenue could be blocked by queues at the Los Altos Avenue/El Camino Real intersection. If it were blocked when an inbound vehicle came along, that could cause a queue spillback onto El Camino Real.

Attachment 3: Construction Health Risk Modeling Outputs

4350 El Camino Real, Los Altos, CA

DPM Construction Emissions and Modeling Emission Rates

Construction Year	Activity	DPM (ton/year)	Source Type	No. Sources	DPM Emissions (lb/yr)	(lb/hr)	(g/s)	Emissions per Point Source (g/s)
2020	Construction	0.0685	Point	81	137.0	0.04170	5.25E-03	**6.49E-05**
2021	Construction	0.0202	Point	81	40.4	0.01230	1.55E-03	**1.91E-05**

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

4350 El Camino Real, Los Altos, CA

PM2.5 Fugitive Dust Construction Emissions for Modeling

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	(lb/yr)	(lb/hr)	(g/s)	Modeled Area (m^2)	Emission Rate $g/s/m^2$
2020	Construction	FUG	0.0128	25.6	0.00779	9.82E-04	2,709	**3.62E-07**
2021	Construction	FUG	0.0003	0.5	0.00016	1.99E-05	2,709	**7.36E-09**
Total			***0.0131***	***26.1***	***0.0080***	***0.0010***		

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

DPM Construction Emissions and Modeling Emission Rates - With Mitigation

Construction Year	Activity	DPM (ton/year)	Source Type	No. Sources	DPM Emissions (lb/yr)	(lb/hr)	(g/s)	Emissions per Point Source (g/s)
2020	Construction	0.0035	Point	81	7.0	0.00213	2.68E-04	**3.31E-06**
2021	Construction	0.0014	Point	81	2.8	0.00085	1.07E-04	**1.32E-06**

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

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

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	Emission Rate $g/s/m^2$
2020	Construction	CON_FUG	0.00349	7.0	0.00212	2.68E-04	2,709	**9.88E-08**
2021	Construction	FUG	0.0003	0.5	0.00016	1.99E-05	2,709	**7.36E-09**
Total			***0.0038***	***7.5***	***0.0023***	***0.0003***		
		hr/day =	9	(7am - 4pm)				
		days/yr =	365					
		hours/year =	3285					

4350 El Camino Real, Los Altos, 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	0.5694	0.0838	101.59	1.63	0.114	0.65
2021	0.1679	0.0017	27.58	0.48	0.034	0.17
Total	-	-	**129.2**	**2.1**	-	-
Maximum	0.5694	0.0838	**-**	**-**	**0.114**	**0.65**

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	0.0291	0.0229	5.19	0.08	0.006	0.05
2021	0.0116	0.0017	1.90	0.03	0.002	0.01
Total	-	-	**7.1**	**0.1**	-	-
Maximum	0.0291	0.0229	**-**	**-**	**0.006**	**0.05**

Maximum Impacts at BridgePoint 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): Adult	Hazard Index (-)	Maximum Annual PM2.5 Concentration ($\mu g/m^3$)
2020	0.0154	0.0039	0.04	0.003	0.02
2021	0.0046	0.0001	0.01	0.001	0.00
Total	-	-	**0.1**	-	-
Maximum	0.0154	0.0039	**-**	**0.003**	**0.02**

4350 El Camino Real, Los Altos, CA - Unmitigated Emissions
Maximum DPM Cancer Risk Calculations From Construction
Impacts at Off-Site Receptors-1.5 meter receptor height

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

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

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

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

Values

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

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

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Information				Adult - Exposure Information					
				DPM Conc (ug/m3)	Age	Infant/Child		Modeled DPM Conc (ug/m3)	Age	Adult		
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Annual**	**Sensitivity Factor**	**Cancer Risk (per million)**	**Year**	**Annual**	**Sensitivity Factor**	**Cancer Risk (per million)**	**Fugitive PM2.5**	**Total PM2.5**
0	0.25	-0.25 - 0*	2020	0.2851	10	4.04	2020	0.2851	-	-		
1	1	0 - 1	2020	0.2851	10	46.82	2020	0.2851	1	0.82	0.3050	0.579
2	1	1 - 2	2021	0.0841	10	13.81	2021	0.0841	1	0.24	0.0056	0.090
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						**64.7**				**1.06**		

* Third trimester of pregnancy

4350 El Camino Real, Los Altos, CA - Unmitigated Emissions
Maximum DPM Cancer Risk Calculations From Construction
Impacts at Off-Site Receptors-4.5 meter

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

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

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

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

Values

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

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

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Information				Adult - Exposure Information					
							Modeled					
Exposure Year	**Exposure Duration (years)**	**Age**	**DPM Conc (ug/m3) Year**	**DPM Conc (ug/m3) Annual**	**Age Sensitivity Factor**	**Infant/Child Cancer Risk (per million)**	**DPM Conc (ug/m3) Year**	**DPM Conc (ug/m3) Annual**	**Age Sensitivity Factor**	**Adult Cancer Risk (per million)**	**Fugitive PM2.5**	**Total PM2.5**
0	0.25	-0.25 - 0*	2020	0.4396	10	6.23	2020	0.4396	-	-		
1	1	0 - 1	2020	0.4396	10	72.21	2020	0.4396	1	1.26	0.2032	0.643
2	1	1 - 2	2021	0.1296	10	21.29	2021	0.1296	1	0.37	0.0041	0.134
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						**99.7**				**1.63**		

* Third trimester of pregnancy

4350 El Camino Real, Los Altos, CA - Unmitigated Emissions
Maximum DPM Cancer Risk Calculations From Construction
Impacts at Off-Site Receptors-4.5 meter

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

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

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

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

Values

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

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

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Information				Adult - Exposure Information					
				DPM Conc (ug/m3)	Age	Infant/Child		Modeled DPM Conc (ug/m3)	Age	Adult		
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Annual**	**Sensitivity Factor**	**Cancer Risk (per million)**	**Year**	**Annual**	**Sensitivity Factor**	**Cancer Risk (per million)**	**Fugitive PM2.5**	**Total PM2.5**
0	0.25	-0.25 - 0*	2020	0.5694	10	8.07	2020	0.5694	-	-		
1	1	0 - 1	2020	0.5694	10	93.52	2020	0.5694	1	1.63	0.0838	0.653
2	1	1 - 2	2021	0.1679	10	27.58	2021	0.1679	1	0.48	0.0017	0.170
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						**129.2**				**2.12**		

* Third trimester of pregnancy

4350 El Camino Real, Los Altos, C - Mitigated Emissions
Maximum DPM Cancer Risk Calculations From Construction
Impacts at Off-Site Receptors-1.5 meter

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

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

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

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

Values

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

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

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Information				Adult - Exposure Information					
			DPM Conc (ug/m3)		Age	Infant/Child	Modeled DPM Conc (ug/m3)		Age	Adult		
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Annual**	**Sensitivity Factor**	**Cancer Risk (per million)**	**Year**	**Annual**	**Sensitivity Factor**	**Cancer Risk (per million)**	**Fugitive PM2.5**	**Total PM2.5**
0	0.25	-0.25 - 0*	2020	0.0291	10	0.41	2020	0.0291	-	-		
1	1	0 - 1	2020	0.0291	10	4.78	2020	0.0291	1	0.08	0.0229	0.052
2	1	1 - 2	2021	0.0116	10	1.90	2021	0.0116	1	0.03	0.0017	0.013
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						**7.1**				**0.12**		

* Third trimester of pregnancy

BridgePoint at Los Altos, Los Altos, CA - Unmitigated Emissions
Maximum DPM Cancer Risk Calculations From Construction
Impacts at Adult Senior 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

			Adult - Exposure Information			Adult		
			Modeled		Age	Cancer		
Exposure	Exposure Duration		DPM Conc (ug/m3)		Sensitivity	Risk	Fugitive	Total
Year	(years)	Age	Year	Annual	Factor	(per million)	PM2.5	PM2.5
0	0.25	-0.25 - 0*	-	-	-	-		
1	1	0 - 1	2020	0.0154	1	0.044	0.0039	0.019
2	1	1 - 2	2021	0.0046	1	0.013	0.0001	0.005
3	1	2 - 3			1	0.00		
4	1	3 - 4			1	0.00		
5	1	4 - 5			1	0.00		
6	1	5 - 6			1	0.00		
7	1	6 - 7			1	0.00		
8	1	7 - 8			1	0.00		
9	1	8 - 9			1	0.00		
10	1	9 - 10			1	0.00		
11	1	10 - 11			1	0.00		
12	1	11 - 12			1	0.00		
13	1	12 - 13			1	0.00		
14	1	13 - 14			1	0.00		
15	1	14 - 15			1	0.00		
16	1	15 - 16			1	0.00		
17	1	16-17			1	0.00		
18	1	17-18			1	0.00		
19	1	18-19			1	0.00		
20	1	19-20			1	0.00		
21	1	20-21			1	0.00		
22	1	21-22			1	0.00		
23	1	22-23			1	0.00		
24	1	23-24			1	0.00		
25	1	24-25			1	0.00		
26	1	25-26			1	0.00		
27	1	26-27			1	0.00		
28	1	27-28			1	0.00		
29	1	28-29			1	0.00		
30	1	29-30			1	0.00		
Total Increased Cancer Risk						**0.06**		

* Retirement comminuty with only adults

Attachment 4: El Camino Real (Highway 82) Emissions, Modeling and Health Impact Calculations

4350 El Camino Real, Los Altos, CA
El Camino Real (SR-82)
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = 2022

Road Link	Description	Direction	No. Lanes	Link Length (m)	Road Width (ft)	Link Width (m)	Release Height (m)	Diesel ADT	Average Speed (mph)
NB_DPM	Northbound El Camino Real	NW	3	686	56	17.0	3.4	373	variable
SB_DPM	Southbound El Camino Real	SE	3	686	56	17.0	3.4	373	variable

2022 Hourly Diesel Traffic Volumes Per Direction and DPM Emissions - NB_DPM

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	2.60%	10	0.0129	9	6.75%	25	0.0136	17	6.28%	23	0.0129
2	1.89%	7	0.0140	10	5.51%	21	0.0116	18	6.31%	24	0.0129
3	2.20%	8	0.0143	11	5.36%	20	0.0113	19	4.46%	17	0.0098
4	1.50%	6	0.0138	12	6.24%	23	0.0110	20	2.82%	11	0.0089
5	1.37%	5	0.0133	13	6.02%	22	0.0107	21	3.22%	12	0.0107
6	1.73%	6	0.0125	14	5.93%	22	0.0107	22	3.59%	13	0.0110
7	4.34%	16	0.0111	15	5.97%	22	0.0101	23	2.61%	10	0.0110
8	6.23%	23	0.0125	16	5.61%	21	0.0098	24	1.46%	5	0.0098
								Total		373	

2022 Hourly Diesel Traffic Volumes Per Direction and DPM Emissions - SB_DPM

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	2.60%	10	0.0129	9	6.75%	25	0.0136	17	6.28%	23	0.0129
2	1.89%	7	0.0140	10	5.51%	21	0.0116	18	6.31%	24	0.0129
3	2.20%	8	0.0143	11	5.36%	20	0.0113	19	4.46%	17	0.0098
4	1.50%	6	0.0138	12	6.24%	23	0.0110	20	2.82%	11	0.0089
5	1.37%	5	0.0133	13	6.02%	22	0.0107	21	3.22%	12	0.0107
6	1.73%	6	0.0125	14	5.93%	22	0.0107	22	3.59%	13	0.0110
7	4.34%	16	0.0111	15	5.97%	22	0.0101	23	2.61%	10	0.0110
8	6.23%	23	0.0125	16	5.61%	21	0.0098	24	1.46%	5	0.0098
								Total		373	

4350 El Camino Real, Los Altos, CA
El Camino Real (SR-82)
PM2.5 & TOG Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2022

Road Link	Description	Direction	No. Lanes	Link Length (m)	Road Width (ft)	Link Width (m)	Release Height (m)	ADT	Average Speed (mph)
NB_PM25	Northbound El Camino Real	NW	3	686	56	17.0	1.3	23,730	variable
SB_PM25	Southbound El Camino Real	SE	3	686	56	17.0	1.3	23,730	variable

2022 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - NB_PM25

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.08%	255	0.0203	9	7.07%	1678	0.0207	17	7.40%	1757	0.0206
2	0.36%	84	0.0208	10	4.24%	1007	0.0200	18	8.32%	1974	0.0205
3	0.29%	70	0.0212	11	4.59%	1089	0.0198	19	5.82%	1381	0.0195
4	0.17%	40	0.0251	12	5.83%	1384	0.0198	20	4.38%	1040	0.0195
5	0.44%	105	0.0206	13	6.17%	1465	0.0197	21	3.29%	781	0.0196
6	0.80%	190	0.0209	14	6.03%	1431	0.0197	22	3.31%	785	0.0197
7	3.75%	891	0.0199	15	7.09%	1682	0.0196	23	2.48%	588	0.0196
8	7.93%	1882	0.0205	16	7.25%	1720	0.0196	24	1.90%	451	0.0195
								Total		23,730	

2022 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - SB_PM25

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.08%	255	0.0203	9	7.07%	1678	0.0207	17	7.40%	1757	0.0206
2	0.36%	84	0.0208	10	4.24%	1007	0.0200	18	8.32%	1974	0.0205
3	0.29%	70	0.0212	11	4.59%	1089	0.0198	19	5.82%	1381	0.0195
4	0.17%	40	0.0251	12	5.83%	1384	0.0198	20	4.38%	1040	0.0195
5	0.44%	105	0.0206	13	6.17%	1465	0.0197	21	3.29%	781	0.0196
6	0.80%	190	0.0209	14	6.03%	1431	0.0197	22	3.31%	785	0.0197
7	3.75%	891	0.0199	15	7.09%	1682	0.0196	23	2.48%	588	0.0196
8	7.93%	1882	0.0205	16	7.25%	1720	0.0196	24	1.90%	451	0.0195
								Total		23,730	

4350 El Camino Real, Los Altos, CA
El Camino Real (SR-82)
Entrained PM2.5 Road Dust Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2022

Group Link	Description	Direction	No. Lanes	Link Length (m)	Road Width (ft)	Link Width (m)	Release Height (m)	ADT	Average Speed (mph)
NB_FUG	Northbound El Camino Real	NW	3	686	56	17.0	1.3	23,730	variable
SB_FUG	Southbound El Camino Real	SE	3	686	56	17.0	1.3	23,730	variable

2022 Hourly Traffic Volumes Per Direction and Road Dust PM2.5 Emissions - NB_FUG

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.08%	255	0.0153	9	7.07%	1678	0.0153	17	7.40%	1757	0.0153
2	0.36%	84	0.0153	10	4.24%	1007	0.0153	18	8.32%	1974	0.0153
3	0.29%	70	0.0153	11	4.59%	1089	0.0153	19	5.82%	1381	0.0153
4	0.17%	40	0.0153	12	5.83%	1384	0.0153	20	4.38%	1040	0.0153
5	0.44%	105	0.0153	13	6.17%	1465	0.0153	21	3.29%	781	0.0153
6	0.80%	190	0.0153	14	6.03%	1431	0.0153	22	3.31%	785	0.0153
7	3.75%	891	0.0153	15	7.09%	1682	0.0153	23	2.48%	588	0.0153
8	7.93%	1882	0.0153	16	7.25%	1720	0.0153	24	1.90%	451	0.0153
								Total		23,730	

2022 Hourly Traffic Volumes Per Direction and Road Dust PM2.5 Emissions - SB_FUG

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.08%	255	0.0153	9	7.07%	1678	0.0153	17	7.40%	1757	0.0153
2	0.36%	84	0.0153	10	4.24%	1007	0.0153	18	8.32%	1974	0.0153
3	0.29%	70	0.0153	11	4.59%	1089	0.0153	19	5.82%	1381	0.0153
4	0.17%	40	0.0153	12	5.83%	1384	0.0153	20	4.38%	1040	0.0153
5	0.44%	105	0.0153	13	6.17%	1465	0.0153	21	3.29%	781	0.0153
6	0.80%	190	0.0153	14	6.03%	1431	0.0153	22	3.31%	785	0.0153
7	3.75%	891	0.0153	15	7.09%	1682	0.0153	23	2.48%	588	0.0153
8	7.93%	1882	0.0153	16	7.25%	1720	0.0153	24	1.90%	451	0.0153
								Total		23,730	

4350 El Camino Real, Los Altos, CA

El Camino Real (SR-82) Traffic Data, DPM, PM2.5 & TOG Emission Factors - 35 mph

Analysis Year = ***2022***

Vehicle Type	2017 Caltrans Number Vehicles (veh/day)	2022 Number Vehicles (veh/day)	2022 Percent Diesel	Number Diesel Vehicles (veh/day)	Vehicle Speed (mph)	Emission Factors				
						Diesel Vehicles DPM (g/VMT)	All Vehicles		Gas Vehicles	
							Total PM2.5 (g/VMT)	Exhaust PM2.5 (g/VMT)	Exhaust TOG (g/VMT)	Running TOG (g/VMT)
LDA	31,963	33,561	1.14%	383	35	0.0077	0.0193	0.0016	0.0139	0.041
LDT	12,076	12,679	0.18%	23	35	0.0112	0.0193	0.0016	0.0215	0.086
MDT	905	950	10.36%	98	35	0.0150	0.0237	0.0030	0.0391	0.179
HDT	257	270	89.39%	241	35	0.0140	0.0710	0.0128	0.1172	0.090
Total	45,200	47,460	-	746	35	-	-		-	-
Mix Avg Emission Factor						**0.01079**	**0.01970**	**0.00167**	**0.01652**	**0.05580**
Increase From 2017		1.05								
Vehicles/Direction		23,730		373						
Avg Vehicles/Hour/Direction		**989**		**16**						

Traffic Data Year = ***2017***

CalTrans AADT & Caltrans Truck AADT		Total	Truck by Axle			
	Total	Truck	2	3	4	5
Rte 82, A Los Altos, San Antonio Ave	45,200	1,162	905	201	9	46
Rte 82, A, Jct Rte 237 East			77.88%	17.34%	0.80%	3.98%
Percent of Total Vehicles		2.57%	2.00%	0.45%	0.02%	0.10%

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

4350 El Camino Real, Los Altos, CA

El Camino Real (SR-82) Traffic Data, DPM, PM2.5 & TOG Emission Factors - 25 mph

Analysis Year = ***2022***

Vehicle Type	2017 Caltrans Number Vehicles (veh/day)	2022 Number Vehicles (veh/day)	2022 Percent Diesel	Number Diesel Vehicles (veh/day)	Vehicle Speed (mph)	Emission Factors				
						Diesel Vehicles DPM (g/VMT)	All Vehicles		Gas Vehicles	
							Total PM2.5 (g/VMT)	Exhaust PM2.5 (g/VMT)	Exhaust TOG (g/VMT)	Running TOG (g/VMT)
LDA	31,963	33,561	1.14%	383	25	0.0102	0.0202	0.0024	0.0216	0.041
LDT	12,076	12,679	0.18%	23	25	0.0149	0.0202	0.0024	0.0331	0.086
MDT	905	950	10.36%	98	25	0.0217	0.0278	0.0072	0.0636	0.179
HDT	257	270	89.39%	241	25	0.0164	0.0726	0.0144	0.1512	0.090
Total	45,200	47,460	-	746	25	-	-	-	-	-
Mix Avg Emission Factor						**0.01384**	**0.02063**	**0.00259**	**0.02558**	**0.05580**
Increase From 2017		1.05								
Vehicles/Direction		23,730		373						
Avg Vehicles/Hour/Direction		**989**		**16**						

Traffic Data Year = ***2017***

CalTrans AADT & Caltrans Truck AADT		Total	Truck by Axle			
	Total	Truck	2	3	4	5
Rte 82, A Los Altos, San Antonio Ave	45,200	1,162	905	201	9	46
Rte 82, A, Jct Rte 237 East			77.88%	17.34%	0.80%	3.98%
Percent of Total Vehicles		2.57%	2.00%	0.45%	0.02%	0.10%

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

4350 El Camino Real, Los Altos, CA
El Camino Real (SR-82) Traffic Data and Entrained PM2.5 Road Dust Emission Factors

$E_{2.5} = [k(sL)^{0.91} \times (W)^{1.02} \times (1-P/4N) \times 453.59$

where:

$E_{2.5}$ = $PM_{2.5}$ emission factor (g/VMT)

k = particle size multiplier (g/VMT) [$k_{PM2.5} = k_{PM10} \times (0.0686/0.4572) = 1.0 \times 0.15 = 0.15$ g/VMT][a]

sL = roadway specific silt loading (g/m^2)

W = average weight of vehicles on road (Bay Area default = 2.4 tons)[a]

P = number of days with at least 0.01 inch of precipitation in the annual averaging period

N = number of days in the annual averaging period (default = 365)

Notes: [a] CARB 2014, Miscellaneous Process Methodology 7.9, Entrained Road Travel, Paved Road Dust (Revised and updated, April 2014)

Road Type	Silt Loading (g/m^2)	Average Weight (tons)	County	No. Days ppt > 0.01"	$PM_{2.5}$ Emission Factor (g/VMT)
Major	0.032	2.4	Santa Clara	64	0.01528

SFBAAB[a]

Road Type	Silt Loading (g/m^2)
Collector	0.032
Freeway	0.02
Local	0.32
Major	0.032

SFBAAB[a]

County	>0.01 inch precipitation
Alameda	61
Contra Costa	60
Marin	66
Napa	68
San Francisco	67
San Mateo	60
Santa Clara	64
Solano	54
Sonoma	69

4350 El Camino Real, Los Altos, CA - El Camino Real - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
On-Site 1st Floor Residential Receptors (1.5 meter receptor heights)

Emissions Year	2022
Receptor Information	
Number of Receptors	18
Receptor Height =	1.5 meters above ground level
Receptor distances =	receptors placed in project residential areas
Meteorological Conditions	
CARB Moffett Field Met Data	2009-2013
Land Use Classification	urban
Wind speed =	variable
Wind direction =	variable

MEI Maximum Concentrations

Meteorological Data Years	Concentration (µg/m^3)		
	DPM	Exhaust TOG	Evaporative TOG
2009 - 2013	0.00307	0.3783	1.1681

Meteorological Data Years	PM2.5 Concentrations (µg/m^3)		
	Total PM2.5	Road Dust PM2.5	Vehicle PM2.5
2009 - 2013	0.7342	0.3185	0.4157

4350 El Camino Real, Los Altos, CA - El Camino Real - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
On-Site 2nd Floor Residential Receptors (4.5 meter receptor heights)

Emissions Year	2022
Receptor Information	
Number of Receptors	22
Receptor Height =	4.5 meters above ground level
Receptor distances =	receptors placed in project residential areas
Meteorological Conditions	
CARB Moffett Field Met Data	2009-2013
Land Use Classification	urban
Wind speed =	variable
Wind direction =	variable

MEI Maximum Concentrations

Meteorological Data Years	Concentration (µg/m^3)		
	DPM	Exhaust TOG	Evaporative TOG
2006-2010	0.00287	0.3196	0.9869

Meteorological Data Years	PM2.5 Concentrations (µg/m^3)		
	Total PM2.5	Road Dust PM2.5	Vehicle PM2.5
2006-2010	0.6201	0.2689	0.3512

4350 El Camino Real, Los Altos, CA - El Camino Real - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
On-Site 3rd Floor Residential Receptors (7.6 meter receptor heights)

Emissions Year	2022
Receptor Information	
Number of Receptors	22
Receptor Height =	7.6 meters above ground level
Receptor distances =	receptors placed in project residential areas
Meteorological Conditions	
CARB Moffett Field Met Data	2009-2013
Land Use Classification	urban
Wind speed =	variable
Wind direction =	variable

MEI Maximum Concentrations

Meteorological Data Years	Concentration (µg/m^3)		
	DPM	Exhaust TOG	Evaporative TOG
2006-2010	0.00183	0.1803	0.5567

Meteorological Data Years	PM2.5 Concentrations (µg/m^3)		
	Total PM2.5	Road Dust PM2.5	Vehicle PM2.5
2006-2010	0.3497	0.1516	0.1981

4350 El Camino Real, Los Altos, CA - El Camino Real - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
On-Site 4th Floor Residential Receptors (10.6 meter receptor heights)

Emissions Year	2022
Receptor Information	
Number of Receptors	22
Receptor Height =	10.6 meters above ground level
Receptor distances =	receptors placed in project residential areas
Meteorological Conditions	
CARB Moffett Field Met Data	2009-2013
Land Use Classification	urban
Wind speed =	variable
Wind direction =	variable

MEI Maximum Concentrations

Meteorological Data Years	Concentration (µg/m^3)		
	DPM	Exhaust TOG	Evaporative TOG
2006-2010	0.00116	0.1097	0.3389

Meteorological Data Years	PM2.5 Concentrations (µg/m^3)		
	Total PM2.5	Road Dust PM2.5	Vehicle PM2.5
2006-2010	0.2129	0.0923	0.1206

4350 El Camino Real, Los Altos, CA - El Camino Real Maximum Cancer Risks
On-Site 1st Floor Residential Receptors (1.5 meter receptor heights)
30-Year Residential Exposure

Cancer Risk Calculation Method

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

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

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

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

Values

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

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

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

* 95th percentile breathing rates

Road Traffic Cancer Risk by Year - Maximum Impact Receptor Location

				Maximum - Exposure Information				Cancer Risk (per million)			
					Annual TAC Conc (ug/m3)						
Exposure Year	Year	Exposure Duration (years)	Age	Age Sensitivity Factor	DPM	Exhaust TOG	Evaporative TOG	DPM	Exhaust TOG	Evaporative TOG	Total
0	2020	0.25	-0.25 - 0*	10	0.0031	0.3783	1.1681	0.042	0.029	0.005	0.08
1	2020	1	1	10	0.0031	0.3783	1.1681	0.50	0.355	0.065	0.92
2	2021	1	2	10	0.0031	0.3783	1.1681	0.50	0.355	0.065	0.92
3	2022	1	3	3	0.0031	0.3783	1.1681	0.08	0.056	0.010	0.15
4	2023	1	4	3	0.0031	0.3783	1.1681	0.08	0.056	0.010	0.15
5	2024	1	5	3	0.0031	0.3783	1.1681	0.08	0.056	0.010	0.15
6	2025	1	6	3	0.0031	0.3783	1.1681	0.08	0.056	0.010	0.15
7	2026	1	7	3	0.0031	0.3783	1.1681	0.08	0.056	0.010	0.15
8	2027	1	8	3	0.0031	0.3783	1.1681	0.08	0.056	0.010	0.15
9	2028	1	9	3	0.0031	0.3783	1.1681	0.08	0.056	0.010	0.15
10	2029	1	10	3	0.0031	0.3783	1.1681	0.08	0.056	0.010	0.15
11	2030	1	11	3	0.0031	0.3783	1.1681	0.08	0.056	0.010	0.15
12	2031	1	12	3	0.0031	0.3783	1.1681	0.08	0.056	0.010	0.15
13	2032	1	13	3	0.0031	0.3783	1.1681	0.08	0.056	0.010	0.15
14	2033	1	14	3	0.0031	0.3783	1.1681	0.08	0.056	0.010	0.15
15	2034	1	15	3	0.0031	0.3783	1.1681	0.08	0.056	0.010	0.15
16	2035	1	16	3	0.0031	0.3783	1.1681	0.08	0.056	0.010	0.15
17	2036	1	17	1	0.0031	0.3783	1.1681	0.01	0.006	0.001	0.016
18	2037	1	18	1	0.0031	0.3783	1.1681	0.01	0.006	0.001	0.016
19	2038	1	19	1	0.0031	0.3783	1.1681	0.01	0.006	0.001	0.016
20	2039	1	20	1	0.0031	0.3783	1.1681	0.01	0.006	0.001	0.016
21	2040	1	21	1	0.0031	0.3783	1.1681	0.01	0.006	0.001	0.016
22	2041	1	22	1	0.0031	0.3783	1.1681	0.01	0.006	0.001	0.016
23	2042	1	23	1	0.0031	0.3783	1.1681	0.01	0.006	0.001	0.016
24	2043	1	24	1	0.0031	0.3783	1.1681	0.01	0.006	0.001	0.016
25	2044	1	25	1	0.0031	0.3783	1.1681	0.01	0.006	0.001	0.016
26	2045	1	26	1	0.0031	0.3783	1.1681	0.01	0.006	0.001	0.016
27	2046	1	27	1	0.0031	0.3783	1.1681	0.01	0.006	0.001	0.016
28	2047	1	28	1	0.0031	0.3783	1.1681	0.01	0.006	0.001	0.016
29	2048	1	29	1	0.0031	0.3783	1.1681	0.01	0.006	0.001	0.016
30	2049	1	30	1	0.0031	0.3783	1.1681	0.01	0.006	0.001	0.016
Total Increased Cancer Risk			**Total**					2.28	1.608	0.293	**4.19**

* Third trimester of pregnancy