IV. ENVIRONMENTAL IMPACT ANALYSIS
B. AIR QUALITY

INTRODUCTION

The air quality data and analysis in this section is based upon evaluation conducted by Baseline Environmental Consulting (Baseline) for the proposed 1000 Gibraltar Drive project ("proposed Project"). The analysis contained within this section is based on information contained within Section III (Project Description) and modeling of traffic data contained in Section IV.E (Transportation). Refer to Appendix F of this Draft EIR for additional information which supports this Air Quality section.

ENVIRONMENTAL SETTING

The most problematic pollutants in the Project vicinity include ozone and particulate matter. The health effects and major sources of these pollutants, as well as other key pollutants, are described below. Toxic air contaminants are a separate class of pollutants and are discussed later in this section.

Ozone

Ground-level ozone ("O_3"), commonly referred to as smog, is greatest on warm, windless, sunny days. O_3 is not emitted directly into the air, but is formed through a complex series of chemical reactions between reactive organic gases ("ROG") and nitrogen oxides ("NO_X"). These reactions occur over time in the presence of sunlight. O_3 formation can occur in a matter of hours under ideal conditions. The time required for O_3 formation allows the reacting compounds to spread over a large area, producing a regional pollution concern. Once formed, O_3 can remain in the atmosphere for one or two days.

O_3 is also a public health concern because it is a respiratory irritant that increases susceptibility to respiratory infections and diseases, and because it can harm lung tissue at high concentrations. In addition, O_3 can cause substantial damage to leaf tissues of crops and natural vegetation and can damage many natural and manmade materials by acting as a chemical oxidizing agent. The principal sources of the O_3 precursors (ROG and NO_X) are the combustion of fuels and the evaporation of solvents, paints, and fuels.

Particulate Matter

Particulate matter ("PM") can be divided into several size fractions. Coarse particles ("PM_{10}") are smaller than 10 microns in diameter and arise primarily from natural processes, such as wind-blown dust or soil. Fine particles ("$PM_{2.5}$") are less than 2.5 microns in diameter and are produced mostly from combustion or burning activities. Fuel burned in cars and trucks, power plants, factories, fireplaces, and wood stoves produce fine particles. $PM_{2.5}$, and to some extent

PM_{10}, contains particles formed in the air from primary gaseous emissions. Examples include sulfates formed from sulfur dioxide ("SO_2") emissions from power plants and industrial facilities, nitrates formed from NO_X emissions from power plants, automobiles, and other combustion sources, and carbon formed from organic gas emissions from automobiles and industrial facilities.

The level of $PM_{2.5}$ in the air is a public health concern because it can bypass the body's natural filtration system more easily than larger particles and can lodge deep in the lungs. The health effects vary depending on a variety of factors, including the type and size of particles. Research has demonstrated a correlation between high PM concentrations and increased mortality rates. Elevated PM concentrations can also aggravate chronic respiratory illnesses such as bronchitis and asthma.

Carbon Monoxide

Carbon monoxide ("CO") is an odorless, colorless gas that is formed by the incomplete combustion of fuels. Motor vehicle emissions are the dominant source of CO within the Project site. At high concentrations, CO reduces the oxygen-carrying capacity of the blood and can cause dizziness, headaches, unconsciousness, and even death. CO can also aggravate cardiovascular disease. Relatively low concentrations of CO can significantly affect the amount of oxygen in the bloodstream because CO binds to hemoglobin 220 to 245 times more strongly than oxygen.

CO emissions and ambient concentrations have decreased significantly in recent years. These improvements are due largely to the introduction of cleaner-burning motor vehicles and motor vehicle fuels. CO is still a pollutant that must be closely monitored, however, due to its severe effect on human health.

Elevated CO concentrations are usually localized and are often the result of a combination of high traffic volumes and traffic congestion. Elevated CO levels develop primarily during winter periods of light winds or calm conditions combined with the formation of ground-level temperature inversions. Wintertime CO concentrations are higher because of reduced dispersion of vehicle emissions and because CO emission rates from motor vehicles increase as temperature decreases.

Nitrogen Dioxide

Nitrogen dioxide ("NO_2") is a brownish, highly reactive gas that is present in all urban environments. The major human-made sources of NO_2 are combustion devices such as boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines. Construction devices emit primarily nitric oxide ("NO"), which reacts through oxidation in the atmosphere to form NO_2. The combined emissions of NO and NO_2 are referred to as NO_X. Because NO_2 is formed and depleted by reactions associated with O_3, the NO_2 concentration in a particular geographic area may not be representative of the local NO_X emission sources.

Inhalation is the most common route of exposure to NO_2. Because NO_2 has relatively low solubility in water, the principal site of toxicity is in the lower respiratory tract. The severity of adverse health effects depends primarily on the concentration inhaled rather than the duration of the exposure. Exposure can result in a variety of acute symptoms, including coughing, difficulty with breathing, vomiting, headache, and eye irritation. Symptoms that are more significant may include chemical pneumonitis or pulmonary edema with breathing abnormalities, cyanosis, chest pain, and rapid heartbeat.

Sulfur Dioxide

Sulfur dioxide ("SO_2") is produced by such stationary sources as coal and oil combustion, steel mills, refineries, and pulp and paper mills. The major adverse health effects associated with exposure to SO_2 pertain to the upper respiratory tract. SO_2 is a respiratory irritant, with constriction of the bronchioles occurring with inhalation of SO_2 at 5 parts per million ("ppm") or more. On contact with the moist mucous membranes, SO_2 produces sulfurous acid, which is a direct irritant. Similar to NO_2, the severity of adverse health effects depends primarily on the concentration inhaled rather than the duration of the exposure. Exposure to high concentrations of SO_2 may result in edema of the lungs or glottis and respiratory paralysis.

Lead

Sources of atmospheric lead include ore and metals processing, piston-engine aircraft operating on leaded fuel, waste incinerators, utilities, and lead-acid battery manufacturer. Lead can accumulate in human bodies over time if inhaled or ingest. Health effects of lead include premature birth, decreased kidney function, hypertension, increased blood pressure, anemia, brain defects, and others. Young children and pregnant women are especially susceptible to lead.

Toxic Air Contaminants

In addition to the criteria pollutants discussed above, toxic air contaminants ("TACs") are another group of pollutants of concern. TACs are considered either carcinogenic or noncarcinogenic based on the nature of the health effects associated with exposure to the pollutant. For regulatory purposes, carcinogenic TACs are assumed to have no safe threshold below which health impacts would not occur, and cancer risk is expressed as excess cancer cases per one million exposed individuals. Noncarcinogenic TACs differ in that there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis.

There are many different types of TACs, with varying degrees of toxicity. Sources of TACs include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust. Public exposure to TACs can result from emissions from normal operations, as well as from accidental releases of hazardous materials during upset conditions. The health effects of TACs include cancer, birth defects, neurological damage, and death.

Diesel particulate matter ("DPM") is a TAC of growing concern in California. According to the California Almanac of Emissions and Air Quality (California Air Resources Board ["CARB"], 2009), the majority of the estimated health risk from TACs can be attributed to relatively few compounds, the most important being DPM. In 1998, after a 10-year scientific assessment process, CARB identified DPM as a TAC. DPM differs from other TACs in that it is not a single substance but rather a complex mixture of hundreds of substances. The exhaust from diesel engines contains hundreds of different gaseous and particulate components, many of which are toxic. Many of these compounds adhere to the particles, and because diesel particles are so small, they penetrate deep into the lungs. DPM has been identified as a human carcinogen. Mobile sources, such as trucks, buses, automobiles, trains, ships, and farm equipment, are by far the largest source of diesel emissions. Studies show that DPM concentrations are much higher near heavily traveled highways and intersections.

Although DPM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present. No ambient monitoring data are available for DPM because no routine measurement method currently exists. However, CARB has made preliminary concentration estimates based on a PM exposure method. This method uses CARB's emissions inventory PM_{10} database, ambient PM_{10} monitoring data, and the results from several studies to estimate concentrations of DPM. In addition to DPM, benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene pose the greatest existing ambient risk, for which data are available, in California. However, DPM poses the greatest health risk among the ten TACs mentioned. It is estimated that about 70 percent of total known cancer risk related to TACs in California is attributable to DPM.[1]

Unlike criteria pollutants like carbon monoxide, TACs do not have ambient air quality standards. Since no safe levels of TACs can be determined, there are no air quality standards for TACs. Instead, TAC impacts are evaluated by calculating the health risks associated with a given exposure. Two types of risk are usually assessed: chronic non-cancer risk and acute non-cancer risk. DPM has been identified as a carcinogenic material but is not considered to have acute non-cancer risks. The State of California has begun a program of identifying and reducing risks associated with DPM. The plan consists of new regulatory standards for all new on-road, off-road, and stationary diesel-fueled engines and vehicles, new retrofit requirements for existing on-road, off-road, and stationary diesel-fueled engines and vehicles, and new diesel fuel regulations to reduce the sulfur content of diesel fuel as required by advanced diesel

[1] *California Air Resources Board, 2020. Overview: Diesel Exhaust and Health. Available at: https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health. Accessed on: October 30.*

emission control systems. Land uses where individuals could be exposed to high levels of diesel exhaust include:[2]

- Railroad operations
- Warehouses
- Schools with a high volume of bus traffic
- High-volume highways
- High-volume arterials and local roadways with a high level of diesel traffic

Meteorology Conditions and Existing Air Quality

San Francisco Bay Area Air Basin

The project site is in the City of Milpitas, which is situated within the San Francisco Bay Area Air Basin (“SFBAAB”). The SFBAAB comprises all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara counties, the southern portion of Sonoma, and the southwestern portion of Solano County. The Bay Area Air Quality Management District (BAAQMD) is the regional air quality agency for the basin. Air quality in this area is determined by such natural factors as topography, meteorology, and climate, in addition to the presence of existing air pollution sources and ambient conditions. These factors are discussed below.

<u>Topography</u>

The topography of the SFBAAB is characterized by complex terrain, consisting of coastal mountain ranges, inland valleys, and bays. This complex terrain, especially the higher elevations, distorts the normal wind flow patterns in the SFBAAB. The greatest distortion occur when low-level inversions are present and the air beneath the inversion flows independently of air above the inversion, a condition that is common in the summer time.

The only major break in California's Coast Range occurs in the SFBAAB. Here the Coast Range splits into western and eastern ranges. Between the two ranges lies San Francisco Bay. The gap in the western coast range is known as the Golden Gate, and the gap in the eastern coast range is the Carquinez Strait. These gaps allow air to pass into and out of the SFBAAB and the Central Valley.

<u>Meteorology and Climate</u>

The SFBAAB is characterized by complex terrain, consisting of coastal mountain ranges, inland valleys, and bays, which distort normal wind flow patterns. The Coast Range splits resulting in a western coast gap, Golden Gate, and an eastern coast gap, Carquinez Strait, which allow air to flow in and out of the SFBAAB and the Central Valley.

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

The climate is dominated by the strength and location of a semi-permanent, subtropical high-pressure cell. During the summer, the Pacific high pressure cell is centered over the northeastern Pacific Ocean resulting in stable meteorological conditions and a steady northwesterly wind flow. Upwelling of cold ocean water from below to the surface because of the northwesterly flow produces a band of cold water off the California coast. The cool and moisture-laden air approaching the coast from the Pacific Ocean is further cooled by the presence of the cold-water band resulting in condensation and the presence of fog and stratus clouds along the Northern California coast.

In the winter, the Pacific high-pressure cell weakens and shifts southward resulting in wind flow offshore, the absence of upwelling, and the occurrence of storms. Weak inversions coupled with moderate winds result in a low air pollution potential.

Summertime temperatures in the SFBAAB are determined in large part by the effect of differential heating between land and water surfaces. Because land tends to heat up and cool off more quickly than water, a large-scale gradient (differential) in temperature is often created between the coast and the Central Valley, and small-scale local gradients are often produced along the shorelines of the ocean and bays. The temperature gradient near the ocean is also exaggerated, especially in summer, because of the upwelling of cold ocean bottom water along the coast. On summer afternoons the temperatures at the coast can be 35ºF cooler than temperatures 15 to 20 miles inland. At night, this contrast usually decreases to less than 10ºF.

In the winter, the relationship of minimum and maximum temperatures is reversed. During the daytime the temperature contrast between the coast and inland areas is small, whereas at night the variation in temperature is large.

The SFBAAB is characterized by moderately wet winters and dry summers. Winter rains account for about 75 percent of the average annual rainfall. The amount of annual precipitation can vary greatly from one part of the SFBAAB to another even within short distances. In general, total annual rainfall can reach 40 inches in the mountains, but it is often less than 16 inches in sheltered valleys.

During rainy periods, ventilation (rapid horizontal movement of air and injection of cleaner air) and vertical mixing are usually high, and thus pollution levels tend to be low. However, frequent dry periods do occur during the winter where mixing and ventilation are low and pollutant levels build up.

Santa Clara Valley

Milpitas is within a climatological subregion, Santa Clara Valley. The subregion is bounded by the Bay to the north and by mountains to the east, south and west. Temperatures are warm on summer days and cool on summer nights, and winter temperatures are fairly mild. At the northern end of the valley, mean maximum temperatures are in the low-80's during the summer and the high-50's during the winter, and mean minimum temperatures range from the high-50's in the summer to the low-40's in the winter. Further inland, where the moderating effect of the

Bay is not as strong, temperature extremes are greater. For example, in San Martin, located 27 miles south of the San Jose Airport, temperatures can be more than 10 degrees warmer on summer afternoons and more than 10 degrees cooler on winter nights.

Winds in the valley are greatly influenced by the terrain, resulting in a prevailing flow that roughly parallels the valley's northwest-southeast axis. A north-northwesterly sea breeze flows through the valley during the afternoon and early evening, and a light south-southeasterly drainage flow occurs during the late evening and early morning. In the summer the southern end of the valley sometimes becomes a "convergence zone," when air flowing from the Monterey Bay gets channelled northward into the southern end of the valley and meets with the prevailing north-northwesterly winds.

Wind speeds are greatest in the spring and summer and weakest in the fall and winter. Nighttime and early morning hours frequently have calm winds in all seasons, while summer afternoons and evenings are quite breezy. Strong winds are rare, associated mostly with the occasional winter storm.

The air pollution potential of the Santa Clara Valley is high. High summer temperatures, stable air and mountains surrounding the valley combine to promote ozone formation. In addition to the many local sources of pollution, ozone precursors from San Francisco, San Mateo and Alameda Counties are carried by prevailing winds to the Santa Clara Valley. The valley tends to channel pollutants to the southeast. In addition, on summer days with low level inversions, ozone can be recirculated by southerly drainage flows in the late evening and early morning and by the prevailing northwesterlies in the afternoon. A similar recirculation pattern occurs in the winter, affecting levels of carbon monoxide and particulate matter. This movement of the air up and down the valley increases the impact of the pollutants significantly.

Pollution sources are plentiful and complex in this subregion. The Santa Clara Valley has a high concentration of industry at the northern end, in the Silicon Valley. Some of these industries are sources of air toxics as well as criteria air pollutants. In addition, Santa Clara Valley's large population and many work-site destinations generate the highest mobile source emissions of any subregion in the SFBAAB.

Air Pollution Potential

The potential for high pollutant concentrations developing at a given location depends upon the quantity of pollutants emitted into the atmosphere in the surrounding area or upwind, and the ability of the atmosphere to disperse the contaminated air. The topographic and climatological factors discussed above influence the atmospheric pollution potential of an area. Atmospheric pollution potential, as the term is used here, is independent of the location of emission sources and is instead a function of factors described below.

Inversions

There are two types of inversions that occur regularly in the SFBAAB. One is more common in the summer and fall, while the other is most common during the winter. The frequent occurrence of elevated temperature inversions in summer and fall months acts to cap the mixing depth, limiting the depth of air available for dilution. Elevated inversions are caused by subsiding air from the subtropical high-pressure zone, and from the cool marine air layer that is drawn into the SFBAAB by the heated low-pressure region in the Central Valley.

The inversions typical of winter, called radiation inversions, are formed as heat quickly radiates from the earth's surface after sunset, causing the air in contact with it to rapidly cool. Radiation inversions are strongest on clear, low-wind, cold winter nights, allowing the build-up of such pollutants as carbon monoxide and particulate matter. When wind speeds are low, there is little mechanical turbulence to mix the air, resulting in a layer of warm air over a layer of cooler air next to the ground. Mixing depths under these conditions can be as shallow as 50 to 100 meters, particularly in rural areas. Urban areas usually have deeper minimum mixing layers because of heat island effects and increased surface roughness. During radiation inversions downwind transport is slow, the mixing depths are shallow, and turbulence is minimal, all factors which contribute to ozone formation.

Although each type of inversion is most common during a specific season, either inversion mechanism can occur at any time of the year. Sometimes both occur simultaneously. Moreover, the characteristics of an inversion often change throughout the course of a day. The terrain of the SFBAAB also induces significant variations among subregions.

Pollution Potential Related to Emissions

Although air pollution potential is strongly influenced by climate and topography, the air pollution that occurs in a location also depends upon the amount of air pollutant emissions in the surrounding area or transported from more distant places. Air pollutant emissions generally are highest in areas that have high population densities, high motor vehicle use, and/or industrialization. These contaminants created by photochemical processes in the atmosphere, such as ozone, may result in high concentrations many miles downwind from the sources of their precursor chemicals.

Attainment Status

Agencies assess the air quality of an area and determine its status in attaining compliance with ambient air quality standards. U.S. Environmental Protection Agency ("EPA") compares ambient air criteria pollutant measurements with the National Ambient Air Quality Standards ("NAAQS"). Similarly, the CARB compares air pollutant measurements with California Ambient Air Quality Standards ("CAAQS"). Based on these comparisons, regions are placed in one of the following categories:

- *Attainment* – A region is “in attainment” if monitoring shows ambient concentrations of a specific pollutant are less than or equal to NAAQS or CAAQS. In addition, an area that has been re-designated from nonattainment to attainment is classified as a “maintenance area” for 10 years to ensure that the air quality improvements are sustained.
- *Non-attainment* – If the NAAQS or CAAQS are exceeded for a pollutant, the region is designated as nonattainment for that pollutant.
- *Unclassified* – An area is unclassified if the ambient air monitoring data are incomplete and do not support a designation of attainment or nonattainment.

The SFBAAB is currently designated as a nonattainment area for state and national ozone standards, state PM_{10} standards, and state and national $PM_{2.5}$ ambient air quality standards. The Bay Area Air Quality Management District (BAAQMD) operates a network of air monitoring stations throughout the SFBAAB to monitor air pollutants such as ozone, PM_{10}, and $PM_{2.5}$. Table IV.B-1 presents a five-year summary for the period 2015 to 2019 of the highest annual concentrations of ozone, PM_{10} and $PM_{2.5}$, which is collected at the San Jose – Jackson Street monitoring station, approximately 4.6 miles south of the project site. Table IV.B-1 also compares measured pollutant concentrations with applicable State and federal ambient air quality standards.

Table IV.B-1
BAAQMD Thresholds of Significance

Pollutant	Standard	2015	2016	2017	2018	2019
Ozone (O_3)	Max 1-hour Concentration (ppm)	0.094	0.087	0.121	0.078	0.081
	Days > CAAQS (0.09 ppm)	0	0	2	0	0
	Max 8-hour Concentration (ppm)	0.081	0.066	0.098	0.061	0.095
	Days > NAAQS (0.070 ppm)	2	0	3	0	1
	Days > NAAQS (0.075 ppm)	2	0	4	0	2
Particulate Matter (PM_{10})	Max 24-hour Concentration (μg/m^3)	58.8	40.0	69.4	155.8	75.4
	Days > CAAQS (50 μg/m^3)	1	0	6	4	4
	Days > NAAQS (150 μg/m^3)	0	0	0	1	0
	Annual Arithmetic Mean (μg/m^3)	21.4	17.9	21.1	23.3	18.6
Particulate Matter ($PM_{2.5}$)	Max 24-hour Concentration (μg/m^3)	49.5	22.7	48.5	133.9	27.7
	Days > NAAQS (35 μg/m^3)	2	0	6	15	0
	Annual Arithmetic Mean (μg/m^3)	9.95	8.14	9.74	12.9	9.12

Existing Sources and Levels of Local Air Pollution

In the Bay Area, stationary and mobile sources are the primary contributors of TACs and $PM_{2.5}$ emissions to local air pollution. In an effort to promote healthy infill development from an air quality perspective, the BAAQMD has prepared guidance entitled Planning Healthy Places.[3] The purpose of this guidance document is to encourage local governments to address and minimize potential local air pollution issues early in the land-use planning process, and to provide technical tools to assist them in doing so. Based on a screening-level cumulative analysis of mobile and stationary sources in the Bay Area, the BAAQMD mapped localized areas of elevated air pollution that: 1) exceed an excess cancer risk of 100 in a million; 2) exceed PM2.5 concentrations of 0.8 micrograms per cubic meter; or 3) are located within 500 feet of a freeway, 175 feet of a major roadway (with more than 30,000 annual average daily vehicle trips), or 500 feet of a ferry terminal. As shown on Figure IV.B-1, Cumulative Sources of Toxic Air Contaminants, elevated levels of $PM_{2.5}$ and/or TAC pollution currently extend across the northwest portion of the project site.

Sensitive Receptors

There are groups of people who are more affected by air pollution than others. CARB has identified the following persons who are most likely to be affected by air pollution: children under 14, the elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive receptors. Locations that may contain a high concentration of these sensitive population groups include residential areas, hospitals, daycare facilities, elder care facilities, elementary schools, and parks. Existing sensitive land uses near the project site include multi-family residential buildings to the east of the project site.

Existing Odors

Other air quality issues of concern include nuisance impacts from odors; objectionable odors may be associated with a variety of pollutants. Odors rarely have direct health impacts, but they can be very unpleasant and lead to anger and concern over possible health effects among the public. According to the BAAQMD, the following odor sources are of particular concern: wastewater treatment plants, oil refineries, asphalt plants, chemical manufacturing, painting/coating operations, coffee roasters, food processing facilities, recycling operations and metal smelters. The project site is surrounded by light industrial and commercial uses, which may include one or more of these typical odor sources.

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[3] *Bay Area Air Quality Management District (BAAQMD), 2016. Planning Healthy Places; A Guidebook for Addressing Local Sources of Air Pollutants in Community Planning, May.*

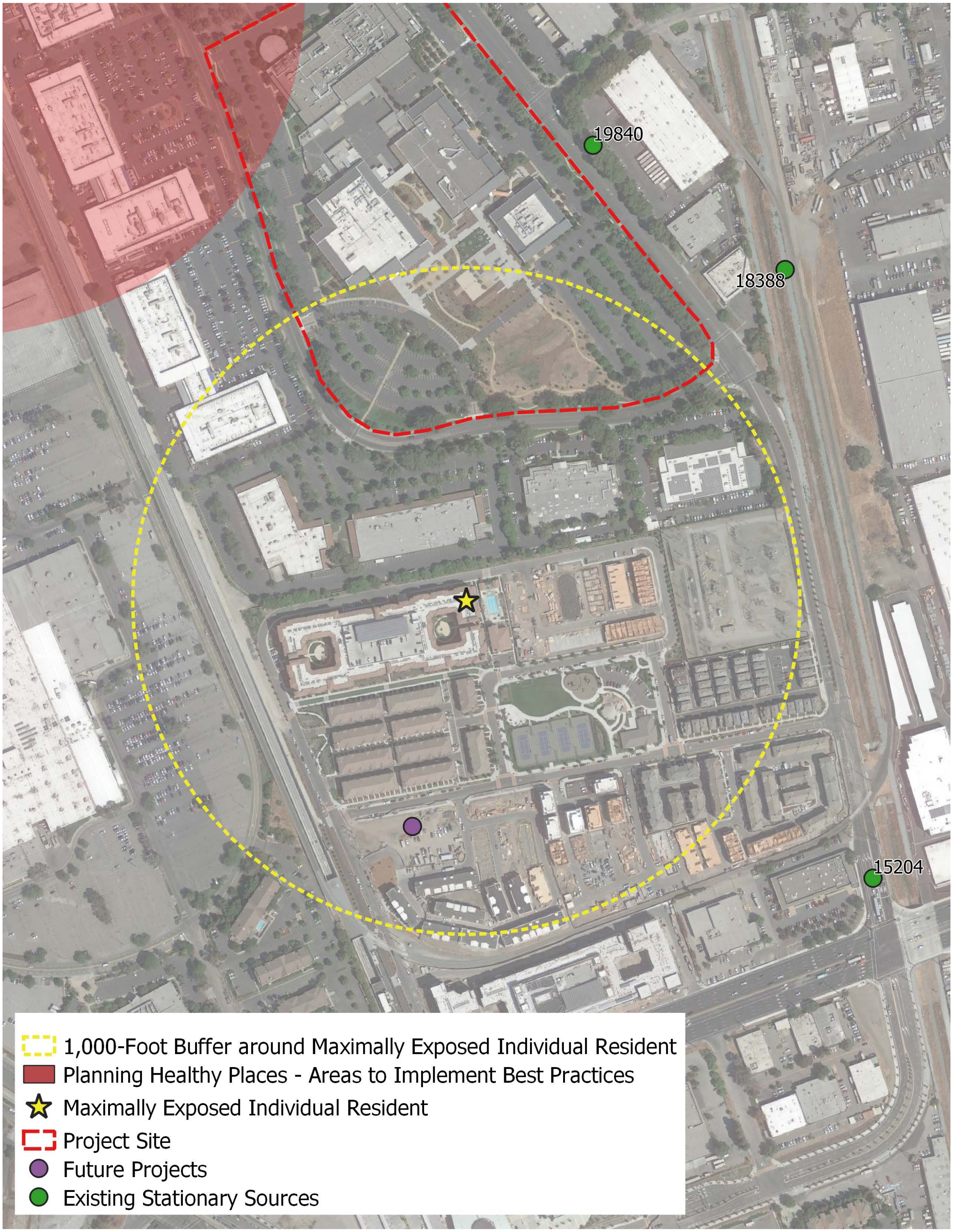

Figure IV.B-1. Cumulative Sources of Toxic Air Contaminants

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REGULATORY FRAMEWORK

Air quality in the region of the Project is regulated by the U.S. EPA, CARB, and the region's Air Quality Management District. Each of these agencies develops rules, regulations, policies, and/or goals to comply with applicable legislation. Although EPA regulations may not be superseded, both state and local regulations may be more stringent. Air quality regulations focus on the criteria air pollutants, because these are the most prevalent air pollutants known to be deleterious to human health, and extensive documents on health-effects criteria are available. The agencies and legislation responsible for improving the air quality relevant to the project are discussed below.

Federal Regulations

U.S. Environmental Protection Agency

The FCAA governs air quality in the United States and is administered by the U.S. EPA. In addition to administering the FCAA, the U.S. EPA is also responsible for setting and enforcing the NAAQS for atmospheric pollutants. As part of its enforcement responsibilities, the U.S. EPA requires each state with non-attainment areas to prepare and submit a State Implementation Plan ("SIP") that demonstrates the means to attain the federal standards. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution. These measures need to incorporate performance standards and market-based programs that can be met within the timeframe identified in the SIP.

State Regulations

California Air Resources Board

CARB is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementation of the California Clean Air Act (CCAA). The CCAA was adopted in 1988 and requires CARB to establish CAAQS. CARB has established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing particulate matter, and the above-mentioned criteria air pollutants. In most cases the CAAQS are more stringent than the National AAQS. Differences in the standards are generally explained through interpretation of the health-effects studies considered during the standard-setting process. In addition, the CAAQS incorporate a margin of safety to protect sensitive individuals.

The CCAA requires that all local air districts in the state endeavor to achieve and maintain the CAAQS by the earliest practical date. The act specifies that local air districts shall focus particular attention on reducing the emissions from transportation and area wide emission sources, and provides districts with the authority to regulate indirect sources.

Other CARB responsibilities include overseeing compliance by local air districts with California and federal laws, approving local air quality attainment plans (AQAPs), submitting SIPs to EPA, monitoring air quality, determining and updating area designations and maps, and setting emissions standards for new mobile sources, consumer products, small utility engines, off-road vehicles, and fuels.

Bay Area Air Quality Management District

The BAAQMD is primarily responsible for ensuring that the NAAQS and CAAQS are attained and maintained in the SFBAAB. The BAAQMD fulfils this responsibility by adopting and enforcing rules and regulations concerning air pollutant sources, issuing permits, inspecting stationary sources of air pollutants, responding to citizen complaints, and monitoring ambient air quality and meteorological conditions. The BAAQMD also awards grants to reduce motor vehicle emissions and conducts public education campaigns and other activities associated with improving air quality within the SFBAAB.

The demolition of existing buildings and structures are subject to BAAQMD's Regulation 11, Rule 2 (Asbestos Demolition, Renovation, and Manufacturing), which limits asbestos emissions from demolition or renovation of structures and the associated disturbance of asbestos-containing waste material generated or handled during these activities. The rule addresses the national emissions standards for asbestos and contains additional requirements. The rule requires the lead agency and its contractors to notify the BAAQMD of any regulated renovation or demolition activity. The notification must include a description of the affected structures and the methods used to determine the presence of asbestos-containing materials. All asbestos-containing material found on-site must be removed prior to demolition or renovation activity in accordance with BAAQMD Regulation 11, Rule 2, which includes specific requirements for surveying, notification, removal, and disposal of materials that contain asbestos. Therefore, projects that comply with Regulation 11, Rule 2, would ensure that asbestos-containing materials would be disposed of appropriately and safely.

The use of odorous compounds is subject to BAAQMD's Regulation 7, which places general limitations on odorous substances and specific emission limitations on certain odorous compounds. The regulation limits the "discharge of any odorous substance which causes the ambient air at or beyond the property line…to be odorous and to remain odorous after dilution with four parts of odor-free air." The BAAQMD must receive odor complaints from 10 or more complainants within a 90-day period in order for the limitations of this regulation to go into effect. If this criterion has been met, an odor violation can be issued by the BAAQMD if a test panel of people can detect an odor in samples collected periodically from the source.

The BAAQMD's CEQA Air Quality Guidelines[4] include thresholds of significance to assist lead agencies in evaluating and mitigating air quality impacts under CEQA. The BAAQMD's thresholds established levels at which emissions of ozone precursors (ROG and NOx), PM_{10}, $PM_{2.5}$, local CO, TACs, and odors could cause significant air quality impacts. The scientific

[4] *Bay Area Air Quality Management District (BAAQMD), 2017. California Environmental Quality Act Air Quality Guidelines, May.*

soundness of the thresholds is supported by substantial evidence presented in the BAAQMD's Revised Draft Options and Justification Report.[5]

In accordance with the California Clean Air Act, the BAAQMD is required to prepare and update an air quality plan that outlines measures by which both stationary and mobile sources of pollutants can be controlled to achieve the NAAQS and CAAQS in areas designated as nonattainment. In April 2017, the BAAQMD adopted the 2017 Clean Air Plan: Spare the Air, Cool the Climate (2017 CAP).[6] The 2017 CAP includes 85 control measures to reduce ozone precursors, particulate matter, TACs, and greenhouse gases. The 2017 CAP was developed based on a multi-pollutant evaluation method that incorporates well-established studies and methods of quantifying the health benefits and air quality regulations, computer modelling and analysis of existing air quality monitoring data and emissions inventories, and traffic and population growth projections prepared by the Metropolitan Transportation Commission and the Association of Bay Area Governments, respectively.

City of Milpitas

The following air quality policy from the 1994 General Plan[7] is applicable:

Land Use Compatibility

> 2.a-I-14: When new uses are proposed in proximity to existing industrial uses, incorporate conditions upon the new use to minimize its negative impacts on existing nearby land uses and to promote the health and safety of individuals at the new development site.

The following regulation from the City's Municipal Codes are applicable to air quality:

> XI-16-13-Indusrial and Commercial Site Controls
>
> (e): The City shall have the authority to enter industrial and commercial properties for the purpose of inspecting site controls and enforcing corrective measures to obtain effective stormwater pollutant controls. The City shall have the authority to require the owners and/or operators of industrial and commercial facilities to implement Best Management Practices to address pollutant sources associated with outdoor process and manufacturing areas, outdoor material storage areas, outdoor waste storage and disposal areas, outdoor vehicle and equipment storage and maintenance areas, outdoor parking areas and access roads, outdoor wash areas, outdoor drainage from indoor areas, rooftop equipment, and contaminated and erodible surface areas, and other sources determined by the Permittees or Water Board Executive Officer to have a reasonable potential to contribute to pollution of stormwater runoff.

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[5] *Bay Area Air Quality Management District (BAAQMD), 2009. Revised Draft Options and Justification Report; California Environmental Quality Act Thresholds of Significance, October.*

[6] *Bay Area Air Quality Management District, 2017. 2017 Clean Air Plan: Spare the Air, Cool the Climate. April 19.*

[7] *City of Milpitas, 1994. General Plan. Adopted: December 1994. Last amended: April 2015.*

ENVIRONMENTAL IMPACTS

Methodology

The methodology used to evaluate the significance of the proposed Project's air quality-related impacts is explained in the context of each impact, as discussed below.

Thresholds of Significance

For the purpose of this analysis, the following thresholds of significance, as identified by the State CEQA Guidelines (Appendix G) and BAAQMD have been used to determine whether implementation of the proposed Project would result in significant air quality impacts. An air quality impact is considered significant if the proposed Project would:

a) Conflict with or obstruct implementation of the applicable air quality plan;

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard;

c) Expose sensitive receptors to substantial pollutant concentrations; or

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

The BAAQMD's thresholds of significance have established levels at which emissions of air pollutants of concern (ROG, NOx, PM_{10}, $PM_{2.5}$, and TACs) and odors could cause significant air quality impacts.[8] The BAAQMD's thresholds of significance used in this CEQA analysis are summarized in Table IV.B-2.

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[8] Bay Area Air Quality Management District (BAAQMD), 2017. California Environmental Quality Act Air Quality Guidelines, May.

Table IV.B-2
Air Quality CEQA Thresholds of Significance

Impact Analysis	Pollutant	Threshold of Significance
Regional Air Quality (Construction)	ROG	54 pounds/day (average daily emission)
	NOx	54 pounds/day (average daily emission)
	Exhaust PM_{10}	82 pounds/day (average daily emission)
	Exhaust $PM_{2.5}$	54 pounds/day (average daily emission)
Regional Air Quality (Operation)	ROG	54 pounds/day (average daily emission) 10 tons/year (maximum annual emissions)
	NOx	54 pounds/day (average daily emission) 10 tons/year (maximum annual emissions)
	Exhaust PM_{10}	82 pounds/day (average daily emission) 15 tons/year (maximum annual emissions)
	Exhaust $PM_{2.5}$	54 pounds/day (average daily emission) 10 tons/year (maximum annual emissions)
Local Community Risks and Hazards (Operation and/or Construction)	Fugitive dust (PM_{10} and $PM_{2.5}$)	Best management practices
	Exhaust $PM_{2.5}$ (project)	0.3 μg/m^3 (annual average)
	TACs (project)	Cancer risk increase > 10 in one million Chronic hazard index (HI) > 1.0
	Exhaust $PM_{2.5}$ (cumulative)	0.8 μg/m^3 (annual average)
	TACs (cumulative)	Cancer risk > 100 in one million Chronic hazard index > 10.0

Note: μg/m^3 = micrograms per cubic meter
Source: BAAQMD, 2017.

Project Impacts and Mitigation Measures

This section presents the Project impact assessment relative to Baseline (Existing) conditions.

Impact AIR-1: The Project would not conflict with or obstruct implementation of the applicable air quality plan

Based on the BAAQMD's current CEQA Air Quality Guidelines, the following criteria should be considered to determine if a project would conflict with or obstruct implementation of the 2017 CAP:

1. Does the project include applicable control measures from the air quality plan?
2. Does the project disrupt or hinder implementation of any air quality plan control measures?
3. Does the project support the primary goals of the air quality plan?

The 2017 CAP includes control measures that aim to reduce air pollution and GHGs from stationary, area, and mobile sources. The control measures are organized into nine categories: stationary sources, transportation, energy, buildings, agriculture, natural and working lands, waste management, water, and super-GHG pollutants (e.g., methane, black carbon, and fluorinated gases).

As described in Table IV.B-3, the Project would be consistent with applicable control measures from the 2017 CAP. Because the Project would not result in any significant and unavoidable air quality impacts related to emissions, ambient concentrations, or public exposures (see discussions for Impacts Air-2 to Air-4), the Project would support the primary goals of the 2017 CAP. Therefore, based on BAAQMD's CEQA Air Quality Guidelines, the Project would not conflict with or obstruct implementation of the applicable air quality plan and the associated air quality impact would be ***less than significant***; therefore, no mitigation measures are required.

Table IV.B-3
Project Consistency with 2017 CAP Control Measures

Control Measures	Proposed Project Consistency
Stationary Sources	The stationary source measures, which are designed to reduce emissions from stationary sources, are incorporated into rules adopted by the BAAQMD and then enforced by the BAAQMD's Permit and Inspection programs. Stationary sources on the project site would include an emergency fire pump, which would be subject to the BAAQMD's permitting requirements for stationary sources. Potential venting of laboratory chemicals to the atmosphere (if any) would also be subject to the BAAQMD's permitting requirements. Therefore, the Project would be consistent with the stationary source control measures of the 2017 CAP.
Transportation	The transportation control measures are designed to reduce vehicle trips, use, miles travelled, idling, or traffic congestion for the purpose of reducing vehicle emissions. According to Chapter IV.E, Transportation, the project would generate vehicles miles travelled per employee that would exceed the countywide threshold and the impact is conservatively considered significant and unavoidable with implementation of Mitigation Measure TRANS-1 requiring a travel demand management program. However, the

	travel demand management program required by Mitigation Measure TRANS-1 will implement feasible trip reduction measures that are consistent with transportation control measures in the 2017 CAP. Therefore, the Project would be consistent with the transportation control measures of the 2017 CAP.
Energy	The energy control measures are designed to reduce emissions of criteria air pollutants, TACs, and GHGs by decreasing the amount of electricity consumed in the Bay Area, as well as decreasing the carbon intensity of the electricity used by switching to less GHG-intensive fuel sources for electricity generation. Since these measures primarily apply to electrical utility providers, the energy control measures of the 2017 CAP are not applicable to the proposed project. Electricity in the Project area is supplied by Pacific Gas and Electric Company (PG&E), which supplies 70 percent of its electric power mix from a combination of renewable and greenhouse-gas (GHG) free sources (PG&E, 2017).
Buildings	The BAAQMD has authority to regulate emissions from certain sources in buildings such as boilers and water heaters, but has limited authority to regulate buildings themselves. Therefore, the building control measures focus on working with local governments that have authority over local building codes to facilitate adoption of best practices and policies to control GHG emissions. The Project would comply with the local building codes and indoor lighting systems would meet the minimum code efficiency requirements for Title-24 Building Energy Efficiency Standards, such as light emitting diode (LED) lighting. Therefore, the project would not conflict with the building control measures of the 2017 CAP.
Agriculture	The agriculture control measures are designed primarily to reduce emissions of methane. Since the Project does not include any agricultural activities, the agriculture control measures of the 2017 CAP are not applicable to the Project.
Natural and Working Lands	The control measures for the natural and working lands sector focus on increasing carbon sequestration on rangelands and wetlands, as well as encouraging local governments to adopt ordinances that promote urban tree plantings. Since the Project does not include the disturbance of any rangelands or wetlands, the natural and working lands control measures of the 2017 CAP are not applicable to the Project.
Waste Management	The waste management measures focus on reducing or capturing methane emissions from landfills and composting facilities, diverting organic materials away from landfills, and increasing waste diversion rates through efforts to reduce, reuse, and recycle. The Project would comply with local requirements for waste management (e.g., recycling). Therefore, the Project would be consistent with the waste management control measures of the 2017 CAP.
Water	The water control measures to reduce emissions from the water sector will reduce emissions of criteria pollutants, TACs, and GHGs by encouraging water conservation, limiting GHG emissions from publicly owned treatment works (POTWs), and promoting the use of biogas recovery systems. Since these measures apply to POTWs and local government agencies (and not individual projects), the water control measures of the 2017 CAP are not applicable to the Project.
Super GHGs	The super-GHG control measures are designed to facilitate the adoption of best practices and policies to control GHG emissions through the BAAQMD and local government agencies. Since these measures do not apply to individual projects, the super-GHG control measures of the 2017 CAP are not applicable to the Project.

Source:
Pacific Gas and Electric Company, 2017. PG&E’s Power Mix. November.
BAAQMD, 2017. California Environmental Quality Act, Air Quality Guidelines. May.

Impact AIR-2: The Project could potentially result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard.

The BAAQMD currently recommends using the most recent version of the California Emissions Estimator Model (CalEEMod version 2016.3.2) to estimate construction and operational emissions of criteria air pollutants and precursors for a proposed project. CalEEMod uses widely accepted models for emission estimates combined with appropriate default data for a variety of land use projects that can be used if site-specific information is not available. The default data (e.g., type and power of construction equipment) are supported by substantial evidence provided by regulatory agencies and a combination of statewide and regional surveys of existing land uses. The primary input data used to estimate emissions associated with construction and operation of the Project are summarized in Table IV.B-4. A copy of the CalEEMod report for the Project, which summarizes the input parameters, assumptions, and findings, is provided in Appendix F.

Construction Emissions of Criteria Air Pollutants

Project construction activities would generate criteria air pollutant emissions that could potentially adversely affect regional air quality. Construction activities would include demolition, site preparation, grading, trenching, building construction, paving, and applications of architectural coatings. The primary pollutant emissions of concern during Project construction would be ROG, NOx, PM_{10}, and $PM_{2.5}$ from the exhaust of off-road construction equipment and on-road vehicles related to worker vehicles, vendor trucks, and haul trucks. In addition, fugitive ROG emissions would result from the application of architectural coatings and paving. Emissions of ROG, NOx, PM_{10}, and $PM_{2.5}$ during Project construction were estimated using the CalEEMod input parameters summarized in Table IV.B-4 and additional assumptions summarized in Table IV.B-5.

Table IV.B-4
Project Land-Use Input Parameters for CalEEMod

Land Use Type	CalEEMod Land Use Type	Unit	Amount
Commercial	General Office Building	Square Foot	5,000
Industrial	Refrigerated Warehouse	Square Foot	486,000
Parking	Parking Lot	Space	346

Note: These land use input parameters were used to evaluate emissions during both Project construction and operation. Land use square footage is not exact.

Source: CalEEMod (Appendix F).

Table IV.B-5
Construction Assumptions for CalEEMod

CalEEMod Input Category	CalEEMod Land Use Type
Construction Schedule and Equipment	Construction was assumed to begin in April 2021 and conclude in January 2022. The default construction schedule and the list of off-road construction equipment were modified according to the information provided by the Project Applicant. The daily hours of operation for each piece of equipment were modified to equal the corresponding total hours of operation for the equipment in each construction phase.
Material Movement	Haul truck trips associated with material movement are modified according to the information provided by the Project Applicant. Approximately 175 round trips would be needed for transport of asphalt and 2,251 round trips would be needed for cement.
Demolition	Approximately 395,000 square feet of existing building would be demolished. All concrete from the existing building and site work, including asphalt, will be crushed and retained on site for fill. Any recyclable materials and trash will be hauled off site.

Note: Project-specific construction information was provided by the Project Applicant. Default CalEEMod data was used for other parameters not described.

Source: CalEEMod (Appendix F).

To analyze daily emission rates during Project construction, the total emissions estimated during construction were averaged over the total work days (188 work days) and compared to the BAAQMD's thresholds of significance. As shown in Table IV.B-6, the Project's estimated emissions for ROG, NOx, and exhaust PM_{10} and $PM_{2.5}$ during construction were well below the applicable thresholds and, therefore, would have a ***less-than-significant*** impact on regional air quality.

Table IV.B-6
Estimated Project Construction Emissions (Pounds per Day)

			Exhaust	
Emissions	**ROG**	**NOx**	**PM_{10}**	**$PM_{2.5}$**
Construction	2.0	24.9	0.7	0.6
BAAQMD's Thresholds	54	54	82	54
Exceed Threshold?	No	No	No	No

Source: CalEEMod (Appendix F).

Operational Emissions of Criteria Air Pollutants

Project operation would generate criteria air pollutant emissions that could potentially affect regional air quality. The primary pollutant emissions of concern during Project operation would be ROG, NOx, and exhaust PM_{10} and $PM_{2.5}$ from mobile sources, energy use, area sources (e.g., consumer products and architectural coatings), and stationary sources. Since statewide vehicle emission standards are required to improve over time in accordance with the Pavley (Assembly Bill 1493) and Low-Emission Vehicle regulations (Title 13, California Code of Regulations, and Section 1961.2), Project emissions were estimated during the first three years of operation (2022, 2023, and 2024) to evaluate the effect of mobile emissions improving over time. Unmitigated emissions of ROG, NOx, PM_{10}, and $PM_{2.5}$ during Project operation were estimated using the CalEEMod input parameters summarized in Table IV.B-4 and additional assumptions summarized in Table IV.B-7.

Table IV.B-7
Operation Assumptions for CalEEMod

CalEEMod Input Category	CalEEMod Land Use Type
Daily Vehicle Trips[a]	Weekday daily trip rates for each trip type (heavy trucks, vans and other passenger cars, and commutes) were based on the Project trip generation from the traffic analysis. Weekend daily trip rates were adjusted based on CalEEMod default ratios between weekday trip rates and weekend trip rates.
Daily Vehicle Miles Travelled (VMT)[a]	Trip lengths for each trip type (heavy trucks, vans and other passenger cars, and commutes) were adjusted so that the resulting daily VMT is consistent with that in the traffic analysis.
Fleet Mix[b]	It was assumed that heavy truck trips consist of 85 percent medium-heavy duty trucks (MHD) and 15 percent heavy-heavy duty trucks (HHD); van and other passenger car trips consist of 40 percent light-heavy duty trucks (LHD), 20 percent medium duty trucks (MDV), 20 percent light-duty trucks, and 20 percent light-duty automobiles (LDA). Fleet age distribution for each vehicle type is default from California On-Road Mobile Source EMission FACtors (EMFAC) model.
Stationary Sources	A 175-horsepower diesel early suppression fast response (ESFR) fire pump would be required for the Project. It was assumed that the fire pump would be used for non-emergency operation up to 50 hours per year (for routine testing and maintenance).

Source:
[a]Fehr and Peers, 2020. Email titled: 1000 Gibraltar total VMT (transportation), from: Ellen Poling, to: Geoff Reilly. October 14.
[b]California Air Resources Board, 2017. EMFAC 2017 Handbook for Project-Level Analysis, V1.0.1. December 22.
CalEEMod (Appendix F).

The annual average emissions of criteria pollutants and precursors during the first three years of Project operation are compared to the BAAQMD's thresholds of significance in Table IV.B-8. Unmitigated ROG and exhaust PM_{10} and $PM_{2.5}$ emissions from Project operation were below the thresholds of significance for each year evaluated; however, unmitigated NOx emissions from Project operation were above the threshold of significance during the first two years of operation in 2022 and 2023. By 2024, the NOx emissions from Project operation were below the threshold of significance due to anticipated reductions in fleetwide average vehicle emissions over time. As shown in Table IV.B-8, approximately 98 percent of the Project's estimated NOx emissions are from mobile sources (e.g., trucks and light-duty vehicles) and are associated with running emissions from Project-generated vehicles miles travelled (VMT).

Table IV.B-8
Estimated Unmitigated and Mitigated Project Operation Emissions

Emission Scenario	Sources	Maximum Annual Emissions (Tons) ROG	NOx	Exhaust PM_{10}	Exhaust $PM_{2.5}$	Average Daily Emissions (Pounds) ROG	NOx	Exhaust PM_{10}	Exhaust $PM_{2.5}$
2022 Unmitigated	Area	2.19	<0.01	<0.01	<0.01	11.98	<0.01	<0.01	<0.01
	Energy	0.01	0.09	0.01	0.01	0.06	0.52	0.04	0.04
	Stationary	0.01	0.02	<0.01	<0.01	0.04	0.11	0.01	0.01
	Mobile	1.17	12.97	0.08	0.08	6.43	71.06	0.46	0.44
	Total	3.4	**13.1**	0.1	0.1	18.5	**71.6**	0.5	0.5
2022 With Mitigation Measure AIR-1	Mobile	1.02	11.70	0.09	0.09	5.57	64.12	0.51	0.48
	Total	3.2	**11.8**	0.1	0.1	17.6	**64.4**	0.5	0.5
2023 Unmitigated[a]	Mobile	1.04	10.0	0.06	0.06	5.71	54.81	0.35	0.34
	Total	3.2	**10.1**	0.1	0.1	17.7	**55.3**	0.4	0.4
2023 With Mitigation Measure AIR-1[a]	Mobile	0.97	9.28	0.08	0.07	5.33	50.85	0.42	0.40
	Total	3.2	9.4	0.1	0.1	17.4	51.4	0.5	0.4
2024 Unmitigated[a]	Mobile	0.99	9.60	0.06	0.06	5.44	52.59	0.34	0.32
	Total	3.2	9.7	0.1	0.1	17.5	53.1	0.4	0.4
BAAQMD's Thresholds		10	10	15	10	54	54	82	54

Note:
***Bold and shaded** means threshold exceedance.*
[a]Emissions from area, energy, and stationary sources were assumed to be the same as 2022.
Source: CalEEMod (Appendix F).

Trucks are significant contributors to the formation of ozone, $PM_{2.5}$, and DPM in California, especially trucks over 10,000 pounds gross vehicle weight rating ("GVWR"), which are responsible for over 70 percent of NOx emissions from on-road mobile sources as of 2019.[9] Over the last three decades, NOx emission standards for on-road trucks have become more stringent. For NOx, the standard has decreased from 6.0 grams per brake horsepower hour

[9] *California Air Resources Board, 2019. Staff White Paper, California Air Resources Board Staff Current Assessment of the Technical Feasibility of Lower NOx Standards and Associated Test Procedures for 2022 and Subsequent Model Year Medium-Duty and Heavy-Duty Diesel Engines. April 18.*

("g/bhp-hr") in 1990 to 0.01 g/bhp-hr in 2010, which means that a heavy-duty truck manufactured in 2000 could be as high as 60 times more polluting than a heavy-duty truck with the same GVWR manufactured after 2010. CARB's Truck and Bus Regulation for trucks greater than 14,000 pounds GVWR also results in higher truck turnover rate by eliminating trucks powered by a 1999 or older model year engine by year 2015, and requiring all trucks to be powered by 2010 or newer models by year 2023.[10]

Consistent with the CARB's Truck and Bus Regulation, Mitigation Measure AIR-1: Tenant-Owned Vehicle Model Year Requirement, below, requires 2010 or newer model year engines on all heavy-duty trucks more than 14,000 pounds GVWR owned by the project tenant accessing the Project site. Mitigation Measure AIR-1 will be applicable until 2024, beyond which point the unmitigated vehicle emissions from the project would no longer contribute to an exceedance of NOx emissions thresholds. As shown in Table IV.B-8, Mitigation Measure AIR-1 would reduce overall Project NOx emissions in 2022 and 2023 by about 10 and 7 percent, respectively; however, Project NOx emissions in 2023 would remain above the threshold of significance with implementation of Mitigation Measure AIR-1.

No on-site mitigation options are available other than Mitigation Measure AIR-1: Tenant-Owned Vehicle Model Year Requirement. Although it is possible to reduce NOx emissions further by placing a limit on vehicle model years for the third-party vehicles (vans and other passenger cars) accessing the Project site, such measures are difficult to implement in an effective manner. Unlike tenant-owned vehicles, there is no effective protocol for monitoring third-party vehicles accessing the Project site. Therefore, additional off-site mitigation would be required to reduce the residual NOx emissions, a maximum of 1.8 tons per year for two years of operation before 2024, as shown in Table IV.B-8. Mitigation Measure AIR-2: Emissions Offsets would require the project applicant to offset the NOx emissions before 2024 below the threshold of significance by either implementing a specific offset program (e.g., equipment replacement), funding the implementation of an emission reduction project through payment of a mitigation offset fee to the BAAQMD's Bay Area Clean Air Foundation, or a combination of the two approaches, in an amount sufficient to mitigate residual emissions. The BAAQMD recommends identifying offset programs located within the nine-county Bay Area in order to reduce the project's cumulative contribution to the region's existing air quality conditions.

Mitigation Measure AIR-1: Tenant-Owned Vehicle Model Year Requirement

At the beginning of Project tenancy, the Project Applicant shall submit proof of evidence to the City of Milpitas that any tenant-owned vehicles above 14,000 pounds gross vehicle weight rating (GVWR) accessing the Project site are solely powered by 2010 or newer engine models. Proof of evidence can include, but is not limited to: Department of Motor Vehicles registration records; emission control labels on individual vehicles; or records from Truck Regulation Up-load, Compliance, and Reporting System (TRUCRS). Compliance shall end in 2024.

[10] *California Air Resources Board, 2019. The Road to 2020: Is Your Vehicle Ready? September.*

Mitigation Measure AIR-2: Emission Offsets

For Project operation in 2022, the Project Applicant, with the oversight of City of Milpitas Planning Department, shall implement either of the following two options or a combination of both:

1. Directly implement a specific offset program (such as requiring Project tenant(s) to replace equipment in the existing tenant-owned operation fleet) to achieve a total annual reduction of 1.8 tons of NOx, subject to the City of Milpitas Planning Department's approval. To qualify under this mitigation measure, the specific emissions offset Project must result in emissions reductions within the San Francisco Bay Area Air Basin that are real, surplus, quantifiable, enforceable, and would not otherwise be achieved through compliance with existing regulatory requirements or any other legal requirement. Prior to implementation of the offset projects, the Project Applicant must obtain Planning Department's approval of the proposed offset projects by providing documentation of the estimated 1.8 tons of annual NOx reduction within the San Francisco Bay Area Air Basin. The Project sponsor shall notify the Planning Department within six months of completion of the offset projects for verification.
2. Pay a mitigation offset fee to the BAAQMD's Bay Area Clean Air Foundation (Foundation) in an amount to be determined at the time of the impact. The mitigation offset fee will be determined by the Planning Department in consultation with the Project Applicant and BAAQMD, and will be based on the type of projects available at the time of impact. This fee is intended to fund emissions reduction projects to achieve an annual reduction of 1.8 tons of NOx.

   For this option, the Project Applicant is required to enter into a Memorandum of Understanding (MOU) with the BAAQMD's Foundation. The MOU will include details regarding the funds to be paid, administrative fee and the timing of the emissions reductions project. Acceptance of this fee by the BAAQMD shall serve as an acknowledgement and commitment by the BAAQMD to: (1) implement an emissions reduction project(s) with a time frame to be determined based on the type of project(s) selected, after receipt of the mitigation fee to achieve the emission reduction objectives specified above; and (2) provide documentation to the City of Milpitas Planning Department and the Project Applicant describing the amount of mitigation fee and the project(s) funded by the mitigation fee, including the amount of emissions of NOx reduced (tons) within the San Francisco Bay Area Air Basin from the emissions reduction project(s). If there is any remaining unspent portion of the mitigation fee following implementation of the emission reduction project(s), the Project Applicant shall be entitled to a refund in that amount from the BAAQMD. To qualify under this mitigation measure, the specific emissions reduction project must result in emission reduction within the San Francisco Bay Area Air Basin that are real, surplus, quantifiable, enforceable, and would not otherwise be achieved through compliance with existing regulatory requirements or any other legal requirement.

Implementation of Mitigation Measures AIR-1 and AIR-2 would reduce the residual NOx emissions below the threshold of significance. However, because the offset program or offset fee required by Mitigation Measure AIR-2 cannot be determined to be real, verifiable, and enforceable at the time of preparation of this EIR, the Project's operational impacts related to emissions of criteria pollutant are considered ***significant and unavoidable*** .

Impact Air-3: c) The Project could potentially expose sensitive receptors to substantial pollutant concentrations.

Fugitive Dust Emissions

Project demolition, site preparation, grading, and material hauling activities during construction could generate fugitive dust PM_{10} and $PM_{2.5}$ emissions that could adversely affect local air quality. The BAAQMD does not have a quantitative threshold of significance for fugitive dust PM_{10} and $PM_{2.5}$ emissions; however, the BAAQMD considers implementation of best management practices to control dust during construction sufficient to reduce potential impacts to a less-than-significant level. More specifically, the BAAQMD recommends that all construction projects implement the Basic Construction Mitigation Measures from the BAAQMD's CEQA Air Quality Guidelines to reduce emissions of fugitive dust (regardless of the estimated emissions). The BAAQMD's Basic Construction Mitigation Measures for controlling dust are summarized under Mitigation Measure AIR-3, below.

Mitigation Measure AIR-3: Fugitive Dust Control during Project Construction

During Project construction, the contractor shall implement a dust control program that includes the following measures recommended by the Bay Area Air Quality Management District (BAAQMD):

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- 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.
- All vehicle speeds on unpaved roads shall be limited to 15 miles per hour.
- 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.
- A publicly visible sign shall be posted 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 BAAQMD phone number shall also be visible to ensure compliance with applicable regulations.

The above measures shall be included in contract specifications. In addition, an independent construction monitor shall conduct periodic site inspections, but in no event less than four total inspections, during the course of construction to ensure these mitigation measures are implemented and shall issue a letter report to the City of Milpitas Building Division documenting the inspection results. Reports indicating non-compliance with construction mitigation measures shall be cause to issue a stop work order until such time as compliance is achieved.

Implementation of Mitigation Measure AIR-3 would reduce potentially significant impacts of fugitive dust emissions during Project construction to a ***less-than-significant*** level.

Toxic Air Contaminants from Construction

The BAAQMD recommends evaluating the potential impacts to sensitive receptors located within 1,000 feet of a project. The Project's potential impacts to sensitive receptors from emissions of TACs are discussed below.

Construction would generate DPM and $PM_{2.5}$ emissions from the exhaust of off-road diesel construction equipment. The annual average concentrations of DPM and exhaust $PM_{2.5}$ during construction were estimated within 1,000 feet of the Project using the U.S. Environmental Protection Agency's Industrial Source Complex Short Term (ISCST3) air dispersion model. For this analysis, emissions of exhaust PM_{10} were used as a surrogate for DPM, which is a conservative assumption because more than 90 percent of DPM is less than 1 micron in diameter. The input parameters and assumptions used for estimating emission rates of DPM and $PM_{2.5}$ from off-road diesel construction equipment are included in Appendix F.

Daily emissions from construction were assumed to occur from 7AM to 7PM every day in accordance with the City of Milpitas ordinance. The exhaust from off-road equipment was represented in the ISCST3 model as a series of volume sources with a release height of 5 meters to represent the mid-range of the expected plume rise from frequently used construction equipment.

The model assumes a uniform grid of receptors spaced 20 meters apart around the Project site with receptor heights of 1.8 meters (approximately 5 feet, 11 inches, for ground-level receptors) for developing isopleths (i.e., concentration contours) that illustrate the air dispersion pattern from the various emission sources. The ISCST3 model input parameters included 3 years of BAAQMD meteorological data from Station 7905 located about 3.5 miles northwest of the Project.

Based on the annual average concentrations of DPM and $PM_{2.5}$ estimated using the air dispersion model (Appendix F), potential health risks were evaluated for the maximally exposed individual resident (MEIR) located about 470 feet south of the project site. The location of the MEIR is shown in Figure IV.B-1, Cumulative Sources of Toxic Air Contaminants.

In accordance with guidance from the BAAQMD[11] and the Office of Environmental Health Hazard Assessment (OEHHA),[12] the health risk assessment calculated the incremental increase in cancer risk and chronic hazard index (HI) to sensitive receptors from DPM emissions during construction. The acute HI for DPM was not calculated because an acute reference exposure level has not been approved by OEHHA and CARB, and the BAAQMD does not recommend analysis of acute non-cancer health hazards from construction activity. The annual average concentration of DPM at the MEIR was used to conservatively assess potential health risks to nearby sensitive receptors.

It was conservatively assumed that the MEIR would be exposed to an annual average DPM concentration over the entire estimated duration of construction (approximately 10.5 months). At the MEIR location, the incremental increase in cancer risk from on-site DPM emissions during construction was assessed for a young child exposed to DPM for 10.5 months starting from infancy in the third trimester of pregnancy. This exposure scenario represents the most sensitive individual who could be exposed to adverse air quality conditions in the vicinity of the Project site. The input parameters and results of the health risk assessment are included in Appendix F.

Table IV.B-9 summarizes the estimated health risks at the MEIR due to DPM and $PM_{2.5}$ emissions from project construction and compares them to the BAAQMD's thresholds of significance. The estimated cancer risks and chronic HIs for DPM and annual average $PM_{2.5}$ concentrations from construction emissions were below the BAAQMD's thresholds of significance. Therefore, the impact from the Project's emissions of DPM and $PM_{2.5}$ during construction on nearby sensitive receptors would be ***less than significant***; therefore, no mitigation measures are required.

Table IV.B-9
Health Risks During Project Construction and Operation at the Maximally Exposed Individual Resident

Emission Source	Diesel Particulate Matter		Exhaust $PM_{2.5}$
	Cancer Risk (per million)	Chronic Hazard Index	Annual Average Concentration (μg/m³)
Project Construction	0.89	<0.01	0.01
Unmitigated Project Operation	3.1	<0.01	<0.01
BAAQMD's Thresholds	10	1	0.3
Exceed Threshold?	No	No	No

Notes: μg/m³ = micrograms per cubic meter.
Source: Appendix F.

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

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

Toxic Air Contaminants from Operation

Two sources of TAC emissions would be present during Project Operation: the proposed emergency fire pump and the diesel vehicles accessing the Project site.

Emissions from the proposed fire pump was modelled as a point source. Because the exact location of the fire pump is not yet known, it was assumed that the fire pump would be located at a ground level near the southern edge of the proposed warehouse, which is the closest possible location to the MEIR. It was assumed that the point source would have a stack height of 3.66 meters, diameter of 1.83 meters, temperature of 739.8 degrees Celsius, and stack velocity of 45.3 meters per second. The emission rate for the proposed fire pump was calculated assuming the annual emissions from 50 hours of routine testing and maintenance would occur continuously (i.e., emissions occur 7 days a week, 24 hours per day, 365 days per year).

Emissions of DPM and $PM_{2.5}$ from diesel vehicles accessing the Project site could pose a health risk to nearby sensitive receptors. Daily operations of trucks were assumed to occur 24 hours a day, 7 days a week. Emissions from on-road diesel vehicles during operation were modelled as line-area sources with a release height of 3 meters in the ISCST3 model along the circulation routes within the Project site and nearby roadways. The modelled roadways included the permitted truck routes in the vicinity of the Project site, as shown in Appendix F. For simplicity, all vehicles assessing the Project site were assumed to be diesel powered, and local emissions on the truck route segments were calculated by scaling total PM_{10} emissions using a ratio between the length of the modelled roadways and average trip length. An air dispersion model similar to that of off-road construction was set up for the proposed Project. Details of calculations are included in Appendix F.

Based on the results of the air dispersion model (Appendix F), potential health risks were evaluated for the MEIR at the same location as the MEIR for project construction, discussed above. It was conservatively assumed that the MEIR would be exposed to an annual average DPM concentration for 30 years, which is consistent with OEHHA's guidance for evaluating cancer risk at the MEIR. Other parameters for the health risks calculation are similar to those used to evaluate the construction TAC emissions, and are included in Appendix F.

Estimates of the health risks at the MEIR from exposure to DPM and exhaust $PM_{2.5}$ concentrations from diesel vehicles accessing the project site during operation are summarized and compared to the thresholds of significance in Table IV.B-9. At the MEIR, the estimated excess cancer risks and chronic HIs for DPM and annual average $PM_{2.5}$ concentrations from the proposed fire pump and the diesel vehicles during project operation were below the thresholds of significance. Therefore, TAC emissions from project operation would have a less-than-significant impact on nearby sensitive receptors.

Cumulative Toxic Air Contaminants Emissions

In addition to a project's individual TAC emissions during construction and operation, the potential cumulative health risks to the MEIR from existing and reasonably foreseeable future sources of TACs were evaluated. The BAAQMD's online screening tools were used to provide conservative estimates of how much existing and foreseeable future TAC sources would contribute to cancer risk, HI, and $PM_{2.5}$ concentrations. The individual health risks associated with each source were summed to find the cumulative health risk at the MEIR.

Based on the BAAQMD's Permitted Stationary Sources Risks and Hazards Screening Tool,[13] no existing stationary source of TAC emissions were identified within 1,000 feet of the MEIR. As shown in Figure III-8, Related Projects Map, there are two foreseeable future projects located within 1,000 feet of the MEIR. However, both of these projects are townhome development and would not include any stationary source of TAC emissions.

Preliminary health risk screening values at the MEIR from exposure to mobile sources of TACs were estimated based on the BAAQMD's Bay Area modelling of health risks from highways, railroads, and major roadways with an average annual daily traffic volume greater than 30,000 vehicles per day. According to the BAAQMD's modelling of mobile sources, nearby highways and major roadways contribute substantially to the existing health risks at the MEIR, as shown in Table IV.B-10.

Estimates of the cumulative health risks at the MEIR are summarized and compared to the BAAQMD's cumulative thresholds of significance in Table IV.B-10. The cumulative cancer risk and chronic HI from DPM emissions and annual average $PM_{2.5}$ concentrations at the MEIR were below the BAAQMD's cumulative thresholds. Therefore, the Project's emissions of DPM and $PM_{2.5}$ during construction and operation would have a ***less-than-significant*** cumulative impact on nearby sensitive receptors; therefore, no mitigation measures are required.

[13] Baseline Environmental Consulting, 2020. Email communication between Ivy Tao at Baseline Environmental Consulting and Areana Flores at Bay Area Air Quality Management District titled: Stationary Source Information Request. May 13.

Table IV.B-10
Summary of Cumulative Health Risks at the Maximally Exposed Individual Resident

Emission Source	Source Type	Diesel Particulate Matter		Exhaust $PM_{2.5}$
		Cancer Risk (per million)	Chronic Hazard Index	Annual Average Concentration (μg/m³)
Off-Road Diesel Construction Equipment	Project Construction	0.89	<0.01	0.01
On-Road Diesel Trucks and Fire Pump	Project Operation	3.1	<0.01	<0.01
Highways	Existing Mobile Sources	10.5	NA	0.22
Major Roadways		3.7	NA	0.8
Cumulative Health Risks		18	<0.1	0.3
BAAQMD's Threshold		100	10.0	0.8
Exceed Threshold?		No	No	No

Notes: μg/m³ = micrograms per cubic meter; NA = not applicable.
Source:
BAAQMD's Bay Area Model of Health Risks from Highways, Railroads, and Major Roadways.
Appendix F.

Impact Air-4: Result in Other Emissions (Such as Those Leading to Odors) Adversely Affecting a Substantial Number of People

Because the Project is a warehouse facility, Project construction and operation would not be expected to generate significant odors. Therefore, the Project would have a ***less-than-significant impact*** related to other emissions; therefore, no mitigation measures are required.

CUMULATIVE IMPACTS

Criteria air pollutant impacts are cumulative impacts because no single project is sufficient in size, by itself, to result in non-attainment of air quality standards. The BAAQMD's thresholds of significance for criteria air pollutants were designed to represent levels above which a project's individual emissions would result in a cumulatively considerable contribution to the SFBAAB's existing air quality conditions. Although construction and operation of the Project would not exceed the BAAQMD's thresholds of significance for criteria pollutants (including ozone precursors) with implementation of Mitigation Measure AIR-1, Mitigation Measure AIR-1 is deemed difficult to enforce, resulting in the cumulative impacts on regional air quality as being ***significant and unavoidable***.

The BAAQMD's thresholds of significance for fugitive dust, TACs and $PM_{2.5}$ were also designed to determine if a project's contribution to local air pollution would be cumulatively considerable. Based on the analysis above, emissions of fugitive dust, DPM and $PM_{2.5}$ generated during construction and operation of the Project would have a ***less-than-significant*** impact on local air quality with implementation of Mitigation Measure AIR-3.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

The following Air Quality impacts would remain ***significant and unavoidable***: Impact AIR-2.

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