4.2 AIR QUALITY

This chapter describes the existing air quality setting and examines the air quality impacts associated with adopting and implementing the proposed Specific Plan Update, and approval and development of the proposed Transit-Oriented Developments (TOD) #1 and #2 (together referred to as the "proposed Project"). "Emissions" refers to the actual quantity of pollutants, measured in pounds per day or tons per year. "Concentrations" refers to the amount of pollutant material per volumetric unit of air. Concentrations are measured in parts per million (ppm), parts per billion (ppb), or micrograms per cubic meter ($\mu g/m^3$).

This chapter is based on the methodology recommended by the Bay Area Air Quality Management District (BAAQMD) for plan and project-level review. The analysis focuses on air pollution from regional emissions and localized pollutant concentrations from buildout of the proposed Specific Plan Update and the proposed TOD #1 and TOD #2 projects. Construction criteria air pollutant emissions modeling is included in Appendix B, Air Quality and Greenhouse Gas Modeling, of this Draft EIR. The construction health risk assessments (HRA) for the construction phases of the proposed TOD #1 and TOD #2 projects are included in Appendix C, Health Risk Assessment, of this Draft EIR.

4.2.1 ENVIRONMENTAL SETTING

California is divided geographically into air basins for the purpose of managing the air resources of the State on a regional basis. An air basin generally has similar meteorological and geographic conditions throughout. The State is divided into 15 air basins. The city is in the San Francisco Bay Area Air Basin (SFBAAB). The discussion below identifies the natural factors in the SFBAAB that affect air pollution. Air pollutants of concern are criteria air pollutants and toxic air contaminants (TACs). Federal, State, and local air districts have adopted laws and regulations intended to control and improve air quality. The regulatory framework that is potentially applicable to the proposed Project is also summarized below.

4.2.1.1 SAN FRANCISCO BAY AREA AIR BASIN

BAAQMD is the regional air quality agency for the SFBAAB, which comprises all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara Counties; the southern portion of Sonoma County; and the southwestern portion of Solano County. 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.[1]

[1] This section describing the air basin is from Bay Area Air Quality Management District, 2010 (Revised 2011), Appendix C: Sample Air Quality Setting, in *California Environmental Quality Act Air Quality Guidelines*.

Meteorology

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[2] splits in the Bay Area, creating a western coast gap, the Golden Gate, and an eastern coast gap, the Carquinez Strait, which allows air to flow in and out of the Bay Area and the Central Valley.

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 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.

Wind Patterns

During the summer, winds flowing from the northwest are drawn inland through the Golden Gate and over the lower portions of the San Francisco Peninsula. Immediately south of Mount Tamalpais in Marin County, the northwesterly winds accelerate considerably and come more directly from the west as they stream through the Golden Gate. This channeling of wind through the Golden Gate produces a jet that sweeps eastward and splits off to the northwest toward Richmond and to the southwest toward San Jose when it meets the East Bay hills.

Wind speeds may be strong locally in areas where air is channeled through a narrow opening, such as the Carquinez Strait, the Golden Gate, or the San Bruno gap. For example, the average wind speed at San Francisco International Airport in July is about 17 knots (from 3:00 p.m. to 4:00 p.m.), compared with only 7 knots in San Jose and less than 6 knots at the Farallon Islands.

The air flowing in from the coast to the Central Valley, called the sea breeze, begins developing at or near ground level along the coast in late morning or early afternoon. As the day progresses, the sea breeze layer deepens and increases in velocity while spreading inland. The depth of the sea breeze depends in large part upon the height and strength of the inversion. Under normal atmospheric conditions, the air in the lower atmosphere is warmer than the air above it. An inversion is a change in the normal conditions that causes the temperature gradient to be reversed, or inverted. If the inversion is low and strong, and hence stable, the flow of the sea breeze will be inhibited, and stagnant conditions are likely to result.

In the winter, the SFBAAB frequently experiences stormy conditions with moderate to strong winds, as well as periods of stagnation with very light winds. Winter stagnation episodes (i.e. conditions where there is little mixing,

[2] The Coast Ranges traverses California's west coast from Humboldt County to Santa Barbara County.

which occurs when there is a lack of or little wind) are characterized by nighttime drainage flows in coastal valleys. Drainage is a reversal of the usual daytime air-flow patterns; air moves from the Central Valley toward the coast and back down toward the Bay from the smaller valleys within the SFBAAB.

Temperature

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 water from the ocean bottom along the coast. On summer afternoons, the temperatures at the coast can be 35 degrees Fahrenheit cooler than temperatures 15 to 20 miles inland; at night, this contrast usually decreases to less than 10 degrees Fahrenheit. 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 climatological station nearest to the project site is San Francisco International Airport Station (ID No. 047769). The average low is reported at 42.6 degrees Fahrenheit in January while the average high is 73.4 degrees Fahrenheit in September.[3]

Precipitation

The SFBAAB is characterized by moderately wet winters and dry summers. Winter rains (November through March) 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 (an upward and downward movement of air) are usually high, and thus pollution levels tend to be low (i.e. air pollutants are dispersed more readily into the atmosphere rather than accumulate under stagnant conditions). However, during the winter, frequent dry periods do occur, where mixing and ventilation are low and pollutant levels build up. Rainfall averages 19.94 inches per year in the Specific Plan Area.[4]

Wind Circulation

Low wind speed contributes to the buildup of air pollution because it allows more pollutants to be emitted into the air mass per unit of time. Light winds occur most frequently during periods of low sun (fall and winter, and early morning) and at night. These are also periods when air pollutant emissions from some sources are at their peak, namely, commuter traffic (early morning) and wood-burning appliances (nighttime). The problem can be compounded in valleys, when weak flows carry the pollutants up-valley during the day, and cold air drainage flows

[3] Western Regional Climate Center. 2015. Western U.S. Historical Summaries – San Francisco International Airport Station Monitoring Station (Station ID No. 047769). http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7769 (Accessed April 23, 2015).

[4] Western Regional Climate Center. 2015. Western U.S. Historical Summaries – San Francisco International Airport Station Monitoring Station (Station ID No. 047769). http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7769 (Accessed April 23, 2015).

move the air mass down-valley at night. Such restricted movement of trapped air provides little opportunity for ventilation and leads to buildup of pollutants to potentially unhealthful levels.

Inversions

As described above, an inversion is a layer of warmer air over a layer of cooler air. Inversions affect air quality conditions significantly because they influence the mixing depth (i.e. the vertical depth in the atmosphere available for diluting air contaminants near the ground). There are two types of inversions that occur regularly in the SFBAAB. Elevation inversions[5] are more common in the summer and fall, and radiation inversions[6] are more common during the winter. The highest air pollutant concentrations in the SFBAAB generally occur during inversions.

4.2.1.2 AIR POLLUTANTS OF CONCERN

A substance in the air that can cause harm to humans and the environment is known as an air pollutant. Pollutants can be in the form of solid particles, liquid droplets, or gases. In addition, they may be natural or man-made. Pollutants can be classified as primary or secondary. Usually, primary pollutants are directly emitted from a process, such as ash from a volcanic eruption, carbon monoxide gas from a motor vehicle exhaust, or sulfur dioxide released from factories. Secondary pollutants are not emitted directly. Rather, they form in the air when primary pollutants react or interact.

Criteria Air Pollutants

The pollutants emitted into the ambient air by stationary and mobile sources are regulated by federal and State law. Air pollutants are categorized as primary and/or secondary pollutants. Primary air pollutants are emitted directly from sources. Carbon monoxide (CO), volatile organic compounds (VOC), nitrogen oxides (NO_x), sulfur dioxide (SO_2), coarse inhalable particulate matter (PM_{10}), fine inhalable particulate matter ($PM_{2.5}$), and lead (Pb) are primary air pollutants. Of these, CO, SO_2, NO_2, PM_{10}, and $PM_{2.5}$ are "criteria air pollutants," which means that ambient air quality standards (AAQS) have been established for them. VOC and NO_x are criteria pollutant precursors that form secondary criteria air pollutants through chemical and photochemical reactions in the atmosphere. Ozone (O_3) and nitrogen dioxide (NO_2) are the principal secondary pollutants.

A description of each of the primary and secondary criteria air pollutants and their known health effects is presented below.

- **Carbon Monoxide (CO)** is a colorless, odorless, toxic gas produced by incomplete combustion of carbon substances, such as gasoline or diesel fuel. CO is a primary criteria air pollutant. CO concentrations tend to be the highest during winter mornings with little or no wind, when surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines, motor vehicles operating at slow speeds are the primary source of CO in the SFBAAB.

[5] When the air blows over elevated areas, it is heated as it is compressed into the side of the hill/mountain. When that warm air comes over the top, it is warmer than the cooler air of the valley.

[6] During the night, the ground cools off, radiating the heat to the sky.

Emissions are highest during cold starts, hard acceleration, stop-and-go driving, and when a vehicle is moving at low speeds. New findings indicate that CO emissions per mile are lowest at about 45 miles per hour (mph) for the average light-duty motor vehicle and begin to increase again at higher speeds. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces its oxygen-carrying capacity. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia, as well as for fetuses. Even healthy people exposed to high CO concentrations can experience headaches, dizziness, fatigue, unconsciousness, and even death.[7] The SFBAAB is designated under the California and National AAQS as being in attainment of CO criteria levels.[8]

- **Volatile Organic Compounds (VOCs)** are compounds composed primarily of hydrogen and carbon atoms. Internal combustion associated with motor vehicle usage is the major source of VOCs. Other sources of VOCs include evaporative emissions from paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. Adverse effects on human health are not caused directly by VOCs, but rather by reactions of VOCs to form secondary pollutants such as O_3. There are no AAQS established for VOCs. However, because they contribute to the formation of O_3, BAAQMD has established a significance threshold for this pollutant.

- **Nitrogen Oxides (NO_x)** are a by-product of fuel combustion and contribute to the formation of O_3, PM_{10}, and $PM_{2.5}$. The two major components of NO_x are nitric oxide (NO) and nitrogen dioxide (NO_2). The principal component of NO_x produced by combustion is NO, but NO reacts with oxygen to form NO_2, creating the mixture of NO and NO_2 commonly called NOx. NO_2 acts as an acute irritant and in equal concentrations is more injurious than NO. At atmospheric concentrations, however, NO2 is only potentially irritating. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis. Some increase in bronchitis in children (two and three years old) has also been observed at concentrations below 0.3 ppm. NO_2 absorbs blue light; the result is a brownish-red cast to the atmosphere and reduced visibility. NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure.[9] The SFBAAB is designated an attainment area for NO_2 under the National AAQS and California AAQS.[10]

- **Sulfur Dioxide (SO_2)** is a colorless, pungent, irritating gas formed by the combustion of sulfurous fossil fuels. It enters the atmosphere as a result of burning high-sulfur-content fuel oils and coal and from chemical processes at chemical plants and refineries. Gasoline and natural gas have very low sulfur content and do not release significant quantities of SO_2. When SO_2 forms sulfates (SO_4) in the atmosphere, together these pollutants are referred to as sulfur oxides (SO_x). Thus, SO_2 is both a primary and secondary criteria air pollutant. At sufficiently high concentrations, SO_2 may irritate the upper respiratory tract. At lower concentrations and when combined with particulates, SO_2 may do greater harm by injuring lung

[7] Bay Area Air Quality Management District , 2010 (Revised 2011), Appendix C: Sample Air Quality Setting, in California Environmental Quality Act Air Quality Guidelines.

[8] California Air Resources Board , 2014, Area Designations: Activities and Maps, http://www.arb.ca.gov/desig/adm/adm.htm, accessed November 21, 2014.

[9] Bay Area Air Quality Management District, 2010 (Revised 2011). Appendix C: Sample Air Quality Setting, in California Environmental Quality Act Air Quality Guidelines.

[10] California Air Resources Board, 2014, Area Designations: Activities and Maps, http://www.arb.ca.gov/desig/adm/adm.htm, accessed November 21, 2014.

tissue.[11] The SFBAAB is designated an attainment area for SO_2 under the California and National AAQS.[12]

- **Suspended Particulate Matter (PM_{10} and $PM_{2.5}$)** consists of finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. Two forms of fine particulates are now recognized and regulated. Inhalable coarse particles, or PM_{10}, include the particulate matter with an aerodynamic diameter of 10 microns (i.e. 10 millionths of a meter or 0.0004-inch) or less. Inhalable fine particles, or $PM_{2.5}$, have an aerodynamic diameter of 2.5 microns or less (i.e. 2.5 millionths of a meter or 0.0001 inch).

  Some particulate matter, such as pollen, occurs naturally. In the SFBAAB, most particulate matter is caused by combustion, factories, construction, grading, demolition, agricultural activities, and motor vehicles. Extended exposure to particulate matter can increase the risk of chronic respiratory disease. PM_{10} bypasses the body's natural filtration system more easily than larger particles and can lodge deep in the lungs. The United States Environmental Protection Agency (US EPA) scientific review concluded that $PM_{2.5}$ penetrates even more deeply into the lungs, and this is more likely to contribute to health effects — at concentrations well below current PM_{10} standards. These health effects include premature death in people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, increased respiratory symptoms (e.g. irritation of the airways, coughing, or difficulty breathing). Motor vehicles are currently responsible for about half of particulates in the SFBAAB. Wood burning in fireplaces and stoves is another large source of fine particulates.[13]

  Both PM_{10} and $PM_{2.5}$ may adversely affect the human respiratory system, especially in people who are naturally sensitive or susceptible to breathing problems. These health effects include premature death and increased hospital admissions and emergency room visits (primarily the elderly and individuals with cardiopulmonary disease); increased respiratory symptoms and disease (children and individual with asthma); and alterations in lung tissue and structure and in respiratory tract defense mechanisms.[14] There has been emerging evidence that even smaller particulates with an aerodynamic diameter of <0.1 microns or less (i.e. ≤0.1 millionths of a meter or <0.000004 inch), known as ultrafine particulates (UFPs), have human health implications, because UFPs toxic components may initiate or facilitate biological processes that may lead to adverse effects to the heart, lungs, and other organs. However, the US EPA or CARB have yet to adopt AAQS to regulate these particulates. Diesel particulate matter (DPM) is also classified a carcinogen by the California Air Resources Board (CARB). The SFBAAB is designated nonattainment under the California AAQS for PM_{10} and nonattainment under both the California and National AAQS for $PM_{2.5}$.[15,16]

[11] Bay Area Air Quality Management District , 2010 (Revised 2011). Appendix C: Sample Air Quality Setting, in California Environmental Quality Act Air Quality Guidelines.

[12] California Air Resources Board, 2014, Area Designations: Activities and Maps, http://www.arb.ca.gov/desig/adm/adm.htm, accessed November 21, 2014.

[13] Bay Area Air Quality Management District, 2010 (Revised 2011). Appendix C: Sample Air Quality Setting, in California Environmental Quality Act Air Quality Guidelines.

[14] South Coast Air Quality Management District, 2005. Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning.

[15] California Air Resources Board (CARB), 2014, Area Designations: Activities and Maps, http://www.arb.ca.gov/desig/adm/
adm.htm, accessed November 21, 2014.

- **Ozone (O_3)** is commonly referred to as "smog" and is a gas that is formed when VOCs and NO_x, both by-products of internal combustion engine exhaust, undergo photochemical reactions in the presence of sunlight. O_3 is a secondary criteria air pollutant. O_3 concentrations are generally highest during the summer months when direct sunlight, light winds, and warm temperatures create favorable conditions to the formation of this pollutant. O_3 poses a health threat to those who already suffer from respiratory diseases as well as to healthy people. O_3 levels usually build up during the day and peak in the afternoon hours. Short-term exposure can irritate the eyes and cause constriction of the airways. Besides causing shortness of breath, it can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema. Chronic exposure to high ozone levels can permanently damage lung tissue. O_3 can also damage plants and trees and materials such as rubber and fabrics.[17] The SFBAAB is designated nonattainment of the 1-hour California AAQS and 8-hour California and National AAQS for O_3.[18]
- **Lead (Pb)** is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of the phase-out of leaded gasoline, metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers. Twenty years ago, mobile sources were the main contributor to ambient lead concentrations in the air. In the early 1970s, the US EPA set national regulations to gradually reduce the lead content in gasoline. In 1975, unleaded gasoline was introduced for motor vehicles equipped with catalytic converters. The US EPA banned the use of leaded gasoline in highway vehicles in December 1995. As a result of the US EPA's regulatory efforts to remove lead from gasoline, emissions of lead from the transportation sector and levels of lead in the air decreased dramatically.[19] The SFBAAB is designated in attainment of the California and National AAQS for lead.[20] Because emissions of lead are found only in projects that are permitted by BAAQMD, lead is not an air quality of concern for the proposed Project.

Toxic Air Contaminants

Public exposure to TACs is a significant environmental health issue in California. In 1983, the California Legislature enacted a program to identify the health effects of TACs and to reduce exposure to these contaminants to protect the public health. The California Health and Safety Code define a TAC as "an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health." A substance that is listed as a hazardous air pollutant pursuant to Section 112(b) of the federal

[16] On January 9, 2013, the EPA issued a final rule to determine that the SFBAAB has attained the 24-hour $PM_{2.5}$ National AAQS. This action suspends federal State Implementation Plan planning requirements for the Bay Area. The SFBAAB will continue to be designated nonattainment for the National 24-hour $PM_{2.5}$ standard until such time as BAAQMD elects to submit a redesignation request and a maintenance plan to EPA and EPA approves the proposed redesignation.

[17] Bay Area Air Quality Management District , 2010 (Revised 2011). Appendix C: Sample Air Quality Setting, in California Environmental Quality Act Air Quality Guidelines.

[18] California Air Resources Board, 2014, Area Designations: Activities and Maps, http://www.arb.ca.gov/desig/adm/adm.htm, accessed November 21, 2014.

[19] Bay Area Air Quality Management District, 2010 (Revised 2011). Appendix C: Sample Air Quality Setting, in California Environmental Quality Act Air Quality Guidelines.

[20] California Air Resources Board, 2014, Area Designations: Activities and Maps, http://www.arb.ca.gov/desig/adm/adm.htm, accessed November 21, 2014.

Clean Air Act (42 US Code Section 7412[b]) is a toxic air contaminant. Under State law, the California Environmental Protection Agency (CalEPA), acting through CARB, is authorized to identify a substance as a TAC if it is an air pollutant that may cause or contribute to an increase in mortality or serious illness, or may pose a present or potential hazard to human health.

California regulates TACs primarily through AB 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics "Hot Spot" Information and Assessment Act of 1987). The Tanner Air Toxics Act sets up a formal procedure for CARB to designate substances as TACs. Once a TAC is identified, CARB adopts an "airborne toxics control measure" for sources that emit designated TACs. If there is a safe threshold for a substance (i.e. a point below which there is no toxic effect), the control measure must reduce exposure to below that threshold. If there is no safe threshold, the measure must incorporate toxics best available control technology to minimize emissions. To date, CARB has established formal control measures for 11 TACs that are identified as having no safe threshold.

Air toxics from stationary sources are also regulated in California under the Air Toxics "Hot Spot" Information and Assessment Act of 1987. Under AB 2588, TAC emissions from individual facilities are quantified and prioritized by the air quality management district or air pollution control district. High priority facilities are required to perform a HRA, and if specific thresholds are exceeded, are required to communicate the results to the public through notices and public meetings.

At the time of the last update to the TAC list in December 1999, CARB had designated 244 compounds as TACs.[21] Additionally, CARB has implemented control measures for a number of compounds that pose high risks and show potential for effective control. The majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most important being particulate matter from diesel-fueled engines.

In 1998, CARB identified diesel particulate matter (DPM) as a TAC. Previously, the individual chemical compounds in diesel exhaust were considered TACs. Almost all diesel exhaust particles are 10 microns or less in diameter. Because of their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lungs.

4.2.1.3 REGULATORY FRAMEWORK

Ambient air quality standards (AAQS) have been adopted at federal and State levels for criteria air pollutants. In addition, both the federal and State governments regulate the release of toxic air contaminants (TACs). The city is in the SFBAAB and is subject to the rules and regulations imposed by the BAAQMD, the national AAQS adopted by the US EPA), as well as the California AAQS adopted by CARB. Federal, State, regional, and local laws, regulations, plans, or guidelines that are potentially applicable to the proposed Project are summarized below.

[21] California Air Resources Board , 1999. Final Staff Report: Update to the Toxic Air Contaminant List.

Federal and State Regulations

Ambient Air Quality Standards

The Clean Air Act (CAA) was passed in 1963 by the United States Congress and has been amended several times. The 1970 Clean Air Act amendments strengthened previous legislation and laid the foundation for the regulatory scheme of the 1970s and 1980s. In 1977, Congress again added several provisions, including nonattainment requirements for areas not meeting National AAQS and the Prevention of Significant Deterioration program. The 1990 amendments represent the latest in a series of federal efforts to regulate the protection of air quality in the United States. The CAA allows states to adopt more stringent standards or to include other pollution species. The California Clean Air Act, signed into law in 1988, requires all areas of the State to achieve and maintain the California AAQS by the earliest practical date. The California AAQS tend to be more restrictive than the National AAQS.

Criteria air pollutants are the air pollutants for which AAQS have been developed that are regulated under the CAA. The national and California AAQS are the levels of air quality considered to provide a margin of safety in the protection of the public health and welfare. They are designed to protect "sensitive receptors" most susceptible to further respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

Both California and the federal government have established health-based AAQS for seven air pollutants, which are shown in Table 4.2-1. These pollutants include ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), coarse inhalable particulate matter (PM_{10}), fine inhalable particulate matter ($PM_{2.5}$), and lead (Pb). In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. The California AAQS tend to be more restrictive than the National AAQS based on even greater health and welfare concerns.

TABLE 4.2-1 AMBIENT AIR QUALITY STANDARDS FOR CRITERIA POLLUTANTS

Pollutant	Averaging Time	California Standard	Federal Primary Standard	Major Pollutant Sources
Ozone (O_3)	1 hour	0.09 ppm	*	Motor vehicles, paints, coatings, and solvents.
	8 hours	0.070 ppm	0.075 ppm	
Carbon Monoxide (CO)	1 hour	20.0 ppm	35.0 ppm	Internal combustion engines, primarily gasoline-powered motor vehicles.
	8 hours	9.0 ppm	9.0 ppm	
Nitrogen Dioxide (NO_2)	Annual Average	0.030 ppm	0.053 ppm	Motor vehicles, petroleum-refining operations, industrial sources, aircraft, ships, and railroads.
	1 hour	0.18 ppm	0.100 ppm	

TABLE 4.2-1 AMBIENT AIR QUALITY STANDARDS FOR CRITERIA POLLUTANTS

Pollutant	Averaging Time	California Standard	Federal Primary Standard	Major Pollutant Sources
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	*	*[a]	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
	1 hour	0.25 ppm	0.075 ppm	
	24 hours	0.04 ppm	*[a]	
Respirable Particulate Matter (PM_{10})	Annual Arithmetic Mean	20.0 µg/m^3	*	Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g. wind-raised dust and ocean sprays).
	24 hours	50.0 µg/m^3	150.0 µg/m^3	
Respirable Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	12.0 µg/m^3	12.0 µg/m^3	Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g. wind-raised dust and ocean sprays).
	24 hours	*	35.0 µg/m^3	
Lead (Pb)	30-Day Average	1.5 µg/m^3	*	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
	Calendar Quarterly	*	1.5 µg/m^3	
	Rolling 3-Month Average	*	0.15 µg/m^3	
Sulfates (SO_4)	24 hours	25 µg/m^3	*	Industrial processes.
Visibility Reducing Particles	8 hours	ExCo[f] =0.23/km visibility of 10≥ miles	No Federal Standard	Visibility-reducing particles consist of suspended particulate matter, which is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size, and chemical composition, and can be made up of many different materials such as metals, soot, soil, dust, and salt.
Hydrogen Sulfide	1 hour	0.03 ppm	No Federal Standard	Hydrogen sulfide (H_2S) is a colorless gas with the odor of rotten eggs. It is formed during bacterial decomposition of sulfur-containing organic substances. Also, it can be present in sewer gas and some natural gas, and can be emitted as the result of geothermal energy exploitation.
Vinyl Chloride	24 hour	0.01 ppm	No Federal Standard	Vinyl chloride (chloroethene), a chlorinated hydrocarbon, is a colorless gas with a mild, sweet odor. Most vinyl chloride is used to make polyvinyl chloride (PVC) plastic and vinyl products. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites,

TABLE 4.2-1 AMBIENT AIR QUALITY STANDARDS FOR CRITERIA POLLUTANTS

Pollutant	Averaging Time	California Standard	Federal Primary Standard	Major Pollutant Sources
				due to microbial breakdown of chlorinated solvents.

Notes: ppm: parts per million; µg/m^3: micrograms per cubic meter
* Standard has not been established for this pollutant/duration by this entity.
a. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual arithmetic mean standards were revoked.
Source: California Air Resources Board (CARB), 2013, June 4. Ambient Air Quality Standards, http://www.arb.ca.gov/research/aaqs/aaqs2.pdf.

Regional Regulations

Bay Area Air Quality Management District

BAAQMD is the agency responsible for assuring that the National and California AAQS are attained and maintained in the SFBAAB. BAAQMD is responsible for:

- Adopting and enforcing rules and regulations concerning air pollutant sources
- Issuing permits for stationary sources of air pollutants
- Inspecting stationary sources of air pollutants
- Responding to citizen complaints
- Monitoring ambient air quality and meteorological conditions
- Awarding grants to reduce motor vehicle emissions
- Conducting public education campaigns
- Air Quality Management Planning

Air quality conditions in the SFBAAB have improved significantly since BAAQMD was created in 1955.[22] BAAQMD prepares air quality management plans (AQMPs) to attain ambient air quality standards in the SFBAAB. BAAQMD prepares ozone attainment plans for the National O_3 standard and clean air plans for the California O_3 standard. BAAQMD prepares these AQMPs in coordination with Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC). The most recently adopted comprehensive plan is the *2010 Bay Area Clean Air Plan*, which was adopted by BAAQMD on September 15, 2010, and incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools.

BAAQMD 2010 Bay Area Clean Air Plan

The purpose of the *2010 Bay Area Clean Air Plan* is to: 1) update the Bay Area 2005 Ozone Strategy in accordance with the requirements of the California Clean Air Act to implement all feasible measures to reduce O_3; 2) consider the impacts of O_3 control measures on PM, TAC, and greenhouse gases (GHGs) in a single, integrated plan; 3) review progress in improving air quality in recent years; and 4) establish emission control measures in the 2009 to

[22] Bay Area Air Quality Management District, 2010 (Revised 2011). Appendix C: Sample Air Quality Setting, in California Environmental Quality Act Air Quality Guidelines.

2012 timeframe. The *2010 Bay Area Clean Air Plan* also provides the framework for the SFBAAB to achieve attainment of the California and National AAQS.

BAAQMD Community Air Risk Evaluation Program

BAAQMD's Community Air Risk Evaluation (CARE) program was initiated in 2004 to evaluate and reduce health risks associated with exposure to outdoor TACs in the Bay Area. Based on findings of the latest report, Diesel Particulate Matter (DPM) was found to account for approximately 85 percent of the cancer risk from airborne toxics. Carcinogenic compounds from gasoline-powered cars and light duty trucks were also identified as significant contributors: 1,3-butadiene contributed four percent of the cancer risk-weighted emissions, and benzene contributed three percent. Collectively, five compounds — diesel PM, 1,3-butadiene, benzene, formaldehyde, and acetaldehyde — were found to be responsible for more than 90 percent of the cancer risk attributed to emissions. All of these compounds are associated with emissions from internal combustion engines. The most important sources of cancer risk-weighted emissions were combustion-related sources of DPM, including on-road mobile sources (31 percent), construction equipment (29 percent), and ships and harbor craft (13 percent). A 75 percent reduction in DPM was predicted between 2005 and 2015 when the inventory accounted for CARB's diesel regulations. Overall, cancer risk from TACs dropped by more than 50 percent between 2005 and 2015, when emissions inputs accounted for state diesel regulations and other reductions.[23] Modeled cancer risks from TACs in 2005 were highest near sources of DPM: near core urban areas, along major roadways and freeways, and near maritime shipping terminals. Peak modeled risks were found to be located east of San Francisco, near West Oakland, and the Maritime Port of Oakland. BAAQMD has identified seven impacted communities in the Bay Area:

- Western Contra Costa County and the cities of Richmond and San Pablo
- Western Alameda County along the Interstate 880 (I-880) corridor and the cities of Berkeley, Alameda, Oakland, San Leandro, and Hayward
- San Jose
- Eastern side of San Francisco
- Concord
- Vallejo
- Pittsburgh and Antioch

The city is not within one of the BAAQMD impacted CARE communities. The closest CARE community to the city is the eastern side of the city of San Francisco.

The major contributor to acute and chronic non-cancer health effects in the SFBAAB is acrolein (C_3H_4O). Major sources of acrolein are on-road mobile sources and aircraft, and areas with high acrolein emissions are near freeways and commercial and military airports.[24] Currently CARB does not have certified emission factors or an

[23] Bay Area Air Quality Management District, 2014. Improving Air Quality & Health in Bay Area Communities, Community Air Risk Program (CARE) Retrospective & Path Forward (2004 – 2013). April

[24] Bay Area Air Quality Management District (BAAQMD), 2006. Community Air Risk Evaluation Program, Phase I Findings and Policy Recommendations Related to Toxic Air Contaminants in the San Francisco Bay Area.

analytical test method for acrolein. Since the appropriate tools needed to implement and enforce acrolein emission limits are not available, BAAQMD does not conduct health risk screening analysis for acrolein emissions.[25]

City/County Association of Governments of San Mateo (C/CAG)

The City/County Association of Governments of San Mateo (C/CAG) is the designated congestion management agency for the county. C/CAG's Congestion Management Plan (CMP) identifies strategies to respond to future transportation needs, develops procedures to alleviate and control congestion, and promotes countywide solutions. The most recent CMP is the 2013 CMP for San Mateo County. Pursuant to the US EPA's transportation conformity regulations and the Bay Area Conformity State Implementation Plan (also known as the Bay Area Air Quality Conformity Protocol), the CMP is required to be consistent with the MTC planning process, including regional goals, policies, and projects for the regional transportation improvement program (RTIP). MTC cannot approve any transportation plan, program, or project unless these activities conform to the State Implementation Plan (SIP). [26]

Plan Bay Area: Strategy for a Sustainable Region

Plan Bay Area is the Bay Area's Regional Transportation Plan (RTP)/Sustainable Community Strategy (SCS). The *Plan Bay Area* was adopted jointly by the ABAG and MTC July 18, 2013. The SCS lays out a development scenario for the region, which when integrated with the transportation network and other transportation measures and policies, would reduce GHG emissions from transportation (excluding goods movement) beyond the per capita reduction targets identified by CARB. According to *Plan Bay Area*, the Plan meets a 16 percent per capita reduction of GHG emissions by 2035 and a 10 percent per capita reduction by 2020 from 2005 conditions. As part of the implementing framework for *Plan Bay Area*, local governments have identified Priority Development Areas (PDAs) to focus growth. PDAs are transit-oriented, infill development opportunity areas within existing communities. Overall, well over two-thirds of all regional growth in the Bay Area by 2040 is allocated within PDAs. PDAs are expected to accommodate 80 percent (or over 525,570 units) of new housing and 66 percent (or 744,230) of new jobs in the region.[27] The Project site is not within a PDA.[28]

[25] Bay Area Air Quality Management District (BAAQMD), 2010. Air Toxics NSR Program, Health Risk Screening Analysis Guidelines.

[26] City/County Association of Governments of San Mateo County (C/CAG)/. 2013, November. Final San Mateo County Congestion Management Program.

[27] Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG), 2013. *Plan Bay Area: Strategy for a Sustainable Region,* July 18.

[28] Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG), 2013. *Plan Bay Area,* http://geocommons.com/maps/141979.

Local Regulations

Millbrae 1998-2015 General Plan

The City of Millbrae General Plan outlines various goals, policies, and actions implementing programs relevant to air quality in the Open Space and Conservation, Circulation and Housing Elements. The policies relevant to the proposed Project are listed in Table 4.2-2.

TABLE 4.2-2 GENERAL PLAN POLICIES RELEVANT TO AIR QUALITY

Number	Policy
Parks, Open Space, and Conservation (PC) Element	
PC6.5	Air Quality. Strive to achieve federal and state air quality standards by managing locally generated pollutants, coordinating with other jurisdictions, and implementing measures to reduce automobile trips in Millbrae and the region. Require that local project Environment Impact Reports meet the air quality analysis criteria set forth by the Bay Area Air Quality Management District.
PC6.6	Air Pollution Sensitive Land Uses. To the extent feasible, separate air pollution sensitive land uses from sources of air pollution.
PC6.7	Agency Coordination in Air Quality Improvements. Coordinate review of large projects with local, regional, and state agencies to improve air quality.
Circulation (C) Element	
C1.5	Transportation and Transit Funding. Encourage regional agencies to provide adequate regional and local funding of roadway and transit improvements through sales tax initiatives, traffic impact fees and other measures when necessary. Ensure that the City remains eligible for and aggressively pursues all available roadway and transit improvements funds.
C1.8	Bikeway and Pedestrian Improvements. Provide appropriate bikeway and pedestrian improvements to promote alternative transportation uses.
C2.5	Coordinate with Major Transportation Agencies. Ensure that continuous coordination is carried out with San Francisco International Airport, BART, Caltrain, SamTrans, Metropolitan Transportation Commission (MTC) and Caltrans to provide funding for appropriate improvements and to mitigate impacts.
C4.1	Transit Access. Encourage the increased regional use of transit to relieve commuter congestion along the U.S. 101, Interstate 280 and SR 82 corridor and to serve the transportation needs of San Mateo County. In coordination with the CMP and transit service providers, attain a coordinated system that is safe, efficient and reliable to provide a convenient alternative to driving. Considerations include: a. Children, commuters and senior citizens should be housed within walking distance (1/4 mile) of bus stops. b. Commuters should be able to easily connect among different modes of transit, whose operating hours should correspond to need. c. Coordination of Sam Trans, BART and Cal Train services. Provision for mobility-impaired individuals.
C4.2	Millbrae BART/Caltrain Station Area. Support development of the Millbrae BART /Caltrain Station area as part of the BART and Caltrain system and provide area specific land use planning and coordination with related agencies to ensure minimal impacts on the City of Millbrae.
C4.6	Reduced Work Trips. Adopt land use, housing and circulation policies supporting the jobs/ housing balance, including local job creation, TSM, provision of housing for all income levels, satellite office sites, and telecommunications improvements to reduce or shorten home to work trips along the travel corridor.

TABLE 4.2-2 GENERAL PLAN POLICIES RELEVANT TO AIR QUALITY

Number	Policy
C4.7	Transportation Systems and Transportation Demand Management. Implement and enforce local and regional TSM and TDM programs.
C4.8	Bikeways Standards. Pursue the following bikeways standards : a. Class I Bikeways: Improved surface of varying width, physically separated from motorized traffic. Can be combined with pedestrian paths and trails~ if properly designed. b. Examples of improved bikeway surfaces include decomposed granite and asphalt concrete. c. Class II Bikeways: Paved right-of-way adjacent to vehicular traffic designed for the exclusive use of bicyclists. Class III Bikeways: Paved right-of-way shared with motorized vehicles and designated as a bike route.
C4.9	Bikeways System. Develop and maintain a safe and logical bikeways system which is coordinated with the countywide system, and will include separate bicycle lanes where possible and posted bicycle routes. This system is intended as a viable alternative mode of travel throughout the City.
C4.10	Bike Parking Facilities. Require adequate bike parking facilities at transportation centers, public parks and buildings, recreational facilities, commercial centers and large multi-family residential projects.
C4.15	Pedestrian System. Develop a safe, pleasant pedestrian system that provides direct and convenient pedestrian access, designed to serve all segments of the public including the young, the aged, and the disabled. Pedestrian safety shall be duly considered in the design of intersection and other roadway improvements. The pedestrian circulation system is intended as a viable alternative mode of travel throughout the City by providing pedestrian facilities, including trails, paths, and sidewalks that are safe, direct and convenient.
CIP-15	TSM and TDM Requirements. Continue to implement TSM and TDM requirements through MTSMA and provide incentives to employers to hire locally.
Housing (H) Element	
H2.4	Energy Conservation in New Housing. Promote the use of energy conservation in residential construction by incorporating energy conservation in all new residential development. New homes shall meet State standards for energy conservation.

Source: City of Millbrae General Plan 1998-2015, adopted 1998. . Circulation Element was amended in 2009.2015-2022 Housing Element Public Hearing Draft April 2015.

4.2.2 EXISTING CONDITIONS

4.2.2.1 ATTAINMENT STATUS OF THE SFBAAB

Areas that meet AAQS are classified attainment areas, and areas that do not meet these standards are classified nonattainment areas. Severity classifications for O_3 range from marginal, moderate, and serious to severe and extreme. The attainment status for the SFBAAB is shown in Table 4.2-3. The SFBAAB is currently designated a nonattainment area for California and National O_3, California and National $PM_{2.5}$, and California PM_{10} AAQS.

TABLE 4.2-3 ATTAINMENT STATUS OF CRITERIA POLLUTANTS IN THE SFBAAB

Pollutant	State	Federal
Ozone – 1-hour	Nonattainment (serious)	Nonattainment
Ozone – 8-hour	Nonattainment	Classification revoked (2005)
PM_{10}	Nonattainment	Unclassified/Attainment
$PM_{2.5}$	Nonattainment	Nonattainment[a]
CO	Attainment	Attainment
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment
Lead	Attainment	Attainment
Sulfates	Attainment	Unclassified/Attainment
All others	Unclassified/Attainment	Unclassified/Attainment

a. On January 9, 2013, the US EPA issued a final rule to determine that the SFBAAB has attained the 24-hour $PM_{2.5}$ National AAQS. This action suspends federal State Implementation Plan planning requirements for the Bay Area. The SFBAAB will continue to be designated nonattainment for the National 24-hour $PM_{2.5}$ standard until such time as BAAQMD elects to submit a redesignation request and a maintenance plan to US EPA and US EPA approves the proposed redesignation.
Source: California Air Resources Board, 2014, Area Designations: Activities and Maps, http://www.arb.ca.gov/desig/adm/adm.htm, June 4.

4.2.2.2 EXISTING AMBIENT AIR QUALITY

Existing levels of ambient air quality and historical trends and projections in the vicinity of Millbrae have been documented by measurements made by the BAAQMD. The Redwood City Monitoring Station is the closest air quality monitoring station to the city. However, this monitoring station does not monitor SO_2 and PM_{10}; therefore, data from the San Jose – Jackson Street and San Francisco – Arkansas Street Monitoring Stations, respectively, were used to supplement data for SO_2 and PM_{10}. Data from these monitoring stations are summarized in Table 4.2-4. The data show that the state and federal eight-hour O_3 standard, the state one-hour O_3 standard, and federal $PM_{2.5}$ standard have been exceeded the last five years. The State PM_{10} standard has been exceeded once in the last five years. The State and federal CO, NO_2, and SO_2 standards have not been exceeded in the last five years in the vicinity of the city.

TABLE 4.2-4 AMBIENT AIR QUALITY MONITORING SUMMARY

	Number of Days Threshold Were Exceeded and Maximum Levels During Such Violations				
Pollutant/Standard	2009	2010	2011	2012	2013
Ozone (O_3)[a]					
State 1-Hour ≥ 0.09 ppm	0	2	0	0	0
State 8-hour ≥ 0.07 ppm	0	1	0	0	1
Federal 8-Hour > 0.075 ppm	0	1	0	0	0
Maximum 1-Hour Conc. (ppm)	0.087	0.113	0.076	0.063	0.083
Maximum 8-Hour Conc. (ppm)	0.063	0.077	0.061	0.054	0.075
Carbon Monoxide (CO)[a]					
State 8-Hour > 9.0 ppm	0	0	0	0	*
Federal 8-Hour ≥ 9.0 ppm	0	0	0	0	*
Maximum 8-Hour Conc. (ppm)	1.76	1.72	1.67	1.81	*
Nitrogen Dioxide (NO_2)[a]					
State 1-Hour ≥ 0.18 (ppm)	0	0	0	0	0
Maximum 1-Hour Conc. (ppb)	0.0560	0.0587	0.0563	0.0563	0.0604
Sulfur Dioxide (SO_2)[b]					
State 1-Hour ≥ 0.04 ppm	0	0	0	0	0
Max. 1-Hour Conc. (ppm)	0.001	0.002	0.003	0.003	0.001
Coarse Particulates (PM_{10})[c]					
State 24-Hour > 50 µg/m^3	0	0	0	1	0
Federal 24-Hour > 150 µg/m^3	0	0	0	0	0
Maximum 24-Hour Conc. (µg/ m^3)	35.3	38.6	43.7	48.2	41.9
Fine Particulates ($PM_{2.5}$)[a]					
Federal 24-Hour > 35 µg/m^3	0	1	1	0	3
Maximum 24-Hour Conc. (µg/m^3)	31.7	36.5	39.7	33.3	39.0

Notes: ppm: parts per million; ppb: parts per billion; µg/m^3: or micrograms per cubic meter; * = insufficient data; NA = Not Available
a. Data from the Redwood City Monitoring Station.
b. Data from the San Jose – Jackson Street Monitoring Station.
c. Data from the San Francisco – Arkansas Street Monitoring Station.
Source: California Air Resources Board, 2014, Air Pollution Data Monitoring Cards (2009, 2010, 2011, 2012, and 2013), Accessed September 30, 2014, http://www.arb.ca.gov/adam/index.html.

4.2.2.3 EXISTING EMISSIONS

The plan area consists primarily of industrial and office land uses, and other uses such as commercial, institutional, and residential uses are also present. These uses currently generate criteria air pollutants from natural gas use for energy, heating and cooking, vehicle trips associated with each land use, and area sources such as landscaping equipment and consumer cleaning products. Table 4.2-5 shows criteria pollutants from existing land uses within the Specific Plan Area.

TABLE 4.2-5 EXISTING CRITERIA AIR POLLUTANT EMISSIONS GENERATED WITHIN THE SPECIFIC PLAN AREA

	Criteria Air Pollutants (lbs/day)			
Category[a]	VOC	NO_x	Exhaust PM_{10}	Exhaust $PM_{2.5}$
Area	24	<1	<1	<1
Energy	1	6	<1	<1
Mobile	35	73	48	14
Total	60	79	49	14
Tons Per Year (tpy)	11 tpy	14 tpy	9 tpy	3 tpy

Note: Totals may not add up to 100 percent due to rounding. Emissions are based on 2014 emission factors.
a. These categories represent the general sources of the air pollutant emissions. An "area source" represents the emission generated from a variety of smaller sources that are not considered point sources (e.g., consumer household cleaning products, paints, landscaping equipment, fireplaces, etc…). The energy category represents air pollutant emissions associated with natural gas use. The mobile category represents emissions generated from motor vehicles.
Source: CalEEMod, Version 2013.2.2. Average daily emissions are derived from the annual emissions to estimate average daily emissions (vs. peak daily emissions reported by Summer and Winter rates in CalEEMod).

4.2.2.4 SENSITIVE RECEPTORS

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardiorespiratory diseases. Residential areas are also considered sensitive receptors to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Other sensitive receptors include retirement facilities, hospitals, and schools. Recreational land uses are considered moderately sensitive to air pollution. Although exposure periods are generally short, exercise places a high demand on respiratory functions, which can be impaired by air pollution. In addition, noticeable air pollution can detract from the enjoyment of recreation. Industrial, commercial, retail, and office areas are considered the least sensitive to air pollution. Exposure periods are relatively short and intermittent, since the majority of the workers tend to stay indoors most of the time. In addition, the working population is generally the healthiest segment of the population.

The closest offsite sensitive receptors to the planning area are the surrounding residential land uses on the northern and western portion along its boundaries and Mills High School to the southwest. In addition, several existing sensitive land uses (e.g. residential) are within the boundaries of the Specific Plan Area.

4.2.3 STANDARDS OF SIGNIFICANCE

The proposed Project would result in a significant air quality impact if it would:

1. Conflict with or obstruct implementation of the applicable air quality plan.
2. Violate any air quality standard or contribute substantially to an existing or projected air quality violation.
3. Result in a cumulatively considerable net increase of any criteria pollutant for which the proposed Project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).
4. Expose sensitive receptors to substantial pollutant concentrations.
5. Create objectionable odors affecting a substantial number of people.

4.2.3.1 BAAQMD THRESHOLDS

The BAAQMD CEQA Air Quality Guidelines 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, and include recommended thresholds of significance, mitigation measures, and background air quality information. They also include recommended assessment methodologies for air toxics, odors, and greenhouse gas emissions. In June 2010, the BAAQMD's Board of Directors adopted CEQA thresholds of significance and an update of the CEQA Guidelines. In May 2011, the updated BAAQMD CEQA Air Quality Guidelines were amended to include a risk and hazards threshold for new receptors and modified procedures for assessing impacts related to risk and hazard impacts.

On March 5, 2012, the Alameda County Superior Court issued a judgment finding that the BAAQMD had failed to comply with CEQA when it adopted the thresholds of significance in the BAAQMD CEQA Air Quality Guidelines. The court did not determine whether the thresholds of significance were valid on their merits, but found that the adoption of the thresholds was a project under CEQA. The court issued a writ of mandate ordering the BAAQMD to set aside the thresholds and cease dissemination of them until the BAAQMD complied with CEQA.

Following the court's order, the BAAQMD released revised CEQA Air Quality Guidelines in May of 2012 that include guidance on calculating air pollution emissions, obtaining information regarding the health impacts of air pollutants, and identifying potential mitigation measures, and which set aside the significance thresholds. The BAAQMD recognizes that lead agencies may rely on the previously recommended Thresholds of Significance contained in its CEQA Guidelines adopted in 1999. The Alameda County Superior Court, in ordering BAAQMD to set aside the thresholds, did not address the merits of the science or evidence supporting the thresholds. The City finds, therefore, that despite the Superior Court' ruling, and in light of the subsequent case history discussed below, the science and reasoning contained in the BAAQMD 2011 CEQA Air Quality Guidelines provide the latest state-of-the-art guidance available. For that reason, substantial evidence supports continued use of the BAAQMD 2011 CEQA Air Quality Guidelines.

On August 13, 2013, the First District Court of Appeal ordered the trial court to reverse the judgment and upheld the BAAQMD's CEQA Guidelines. California Building Industry Association versus Bay Area Air Quality Management District, Case No. A135335 and A136212 (Court of Appeal, First District, August 13, 2013). In addition to the City's independent determination that use of the BAAQMD's CEQA Guidelines is supported by substantial evidence, they have been found to be valid guidelines for use in the CEQA environmental review process. On November 26, 2013, the California Supreme Court granted review on the issue of whether the toxic air contaminants thresholds are consistent with CEQA; specifically, whether CEQA requires analysis of exposing project residents or users to existing environmental hazards.

While the outcome of this case presents uncertainty for current project applicants and local agencies regarding proper evaluation of toxic air contaminants in CEQA documents, local agencies still have a duty to evaluate impacts related to air quality and greenhouse gas emissions. In addition, CEQA grants local agencies broad discretion to develop their own thresholds of significance, or to rely on thresholds previously adopted or recommended by other public agencies or experts so long as they are supported by substantial evidence. Accordingly, the City is using the BAAQMD's 2011 thresholds to evaluate project impacts in order to protectively evaluate the potential effects of the project on air quality and community risk and hazards.

Criteria Air Pollutant Emissions and Precursors

Regional Significance Criteria

Project-Level Evaluation

The BAAQMD's regional significance criteria for projects that exceed the screening thresholds are shown in Table 4.2-6.

TABLE 4.2-6 BAAQMD REGIONAL (MASS EMISSIONS) CRITERIA AIR POLLUTANT SIGNIFICANCE THRESHOLDS

	Construction Phase	Operational Phase	
Pollutant	Average Daily Emissions (lbs/day)	Average Daily Emissions (lbs/day)	Maximum Annual Emissions (Tons/year)
VOC	54	54	10
NO_x	54	54	10
PM_{10}	82 (Exhaust)	82	15
$PM_{2.5}$	54 (Exhaust)	54	10
PM_{10} and $PM_{2.5}$ Fugitive Dust	Best Management Practices	None	None

Source: Bay Area Air Quality Management District (BAAQMD), 2010 (Revised 2011). Appendix D: Threshold of Significance Justification, in California Environmental Quality Act Air Quality Guidelines.

Plan-Level Evaluation

Under its plan-level review criteria, BAAQMD requires a consistency evaluation of a plan with its current air quality plan control measures. The current AQMP is the *2010 Bay Area Clean Air Plan*. BAAQMD considers the project consistent with the AQMP in accordance with the following:

- Does the project support the primary goals of the AQMP?
- Does the project include applicable control measures from the AQMP?
- Does the project disrupt or hinder implementation of any AQMP control measures?
- A comparison that the project vehicle miles traveled (VMT) or vehicle trip increase is less than or equal to the projected population increase.

Local CO Hotspots

Project-Level Evaluation

Congested intersections have the potential to create elevated concentrations of CO, referred to as CO hotspots. The significance criteria for CO hotspots are based on the California AAQS for CO, which is 9.0 ppm (8-hour average) and 20.0 ppm (1-hour average). However, with the turnover of older vehicles, introduction of cleaner fuels, and implementation of control technology, the SFBAAB is in attainment of the California and National AAQS, and CO concentrations in the SFBAAB have steadily declined. Because CO concentrations have improved,

BAAQMD does not require a CO hotspot analysis if the following criteria are met:

- The project is consistent with an applicable CMP established by the County Congestion Management Agency for designated roads or highways, the regional transportation plan, and local congestion management agency plans.
- The project would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.
- The project traffic would not increase traffic volumes at affected intersection to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g. tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).[29]

Plan-Level Evaluation

Under the plan-level review, BAAQMD does not require a quantitative evaluation of CO hotspots.[30]

Community Risk and Hazards

Project-Level Evaluation

The BAAQMD's significance thresholds for local community risk and hazard impacts apply to both the siting of a new source and the siting of a new receptor. Local community risk and hazard impacts are associated with TACs and $PM_{2.5}$ because emissions of these pollutants can have significant health impacts at the local level. For assessing

[29] Bay Area Air Quality Management District, 2011 (revised), California Environmental Quality Act Air Quality Guidelines.
[30] Congested intersections have the potential to create CO hotspots.

community risk and hazards, sources within a 1,000-foot radius are considered. Sources are defined as freeways, high volume roadways (with volumes of 10,000 vehicles or more per day or 1,000 trucks per day), and permitted sources.[31] [32]

The proposed Project would generate TACs and $PM_{2.5}$ during construction activities that could elevate concentrations of air pollutants at the surrounding residential receptors. The BAAQMD has adopted screening tables for air toxics evaluation during construction.[33] Construction-related TAC and $PM_{2.5}$ impacts should be addressed on a case-by-case basis, taking into consideration the specific construction-related characteristics of each project and proximity to off-site receptors, as applicable.[34]

Overall exposures to TACs for the visitors to the guests of the hotel would be relatively low and are considered short-term exposures by BAAQMD. Unlike the exposures to TACs for nearby residences, the short-term exposures to TACs for hotel use receptors would not result in significant health risks. The proposed Project would not result in siting of new sensitive receptors and the community risk and hazards thresholds for operation of the proposed Project are not applicable.

The thresholds identified below are applied to the proposed Project's construction emissions:

Community Risk and Hazards – Project

Project-level construction emissions of TACs or $PM_{2.5}$ from the proposed Project to individual sensitive receptors within 1,000 feet of the Project site that exceed any of the thresholds listed below are considered a potentially significant community health risk:

- Non-compliance with a qualified Community Risk Reduction Plan;
- An excess cancer risk level of more than 10 in one million, or a non-cancer (i.e. chronic or acute) hazard index greater than 1.0 would be a significant cumulatively considerable contribution;
- An incremental increase of greater than 0.3 micrograms per cubic meter (μg/m3) annual average PM2.5 from a single source would be a significant cumulatively considerable contribution.[35]

Community Risk and Hazards – Cumulative

Cumulative sources represent the combined total risk values of each of the individual sources within the 1,000-foot evaluation zone. A project would have a cumulative considerable impact if the aggregate total of all past, present, and foreseeable future sources within a 1,000-foot radius from the fence line of a source or location of a receptor, plus the contribution from the Project, exceeds the following:

- Non-compliance with a qualified Community Risk Reduction Plan; or

[31] Bay Area Air Quality Management District, 2011 (revised), California Environmental Quality Act Air Quality Guidelines.

[32] Bay Area Air Quality Management District, 2012, Recommended Methods for Screening and Modeling Local Risks and Hazards.

[33] Bay Area Air Quality Management District, 2010, Screening Tables for Air Toxics Evaluations during Construction.

[34] Bay Area Air Quality Management District, 2011 (revised), California Environmental Quality Act Air Quality Guidelines.

[35] Bay Area Air Quality Management District, 2011 (revised), California Environmental Quality Act Air Quality Guidelines.

- An excess cancer risk levels of more than 100 in one million or a chronic non-cancer hazard index (from all local sources) greater than 10.0; or
- 0.8 μg/m3 annual average PM2.5.36

Current BAAQMD guidance recommends the determination of cancer risks using the Office of Environmental Health Hazard Assessment's (OEHHA) methodology, which was originally adopted in 2003.[37] [38] In February 2015, OEHHA adopted new health risk assessment guidance which includes several efforts to be more protective of children's health. These updated procedures include the use of age sensitivity factors to account for the higher sensitivity of infants and young children to cancer causing chemicals, and age-specific breathing rates.[39] However, BAAQMD has not formally adopted the new OEHHA methodology into their CEQA guidance. To be conservative, the cancer risks associated with Project implementation and significance conclusions were determined using the new 2015 OEHHA guidance for risk assessments. The cancer risks determined using BAAQMD's adopted 2003 OEHHA guidance are included for informational purposes and comparison.

Plan-Level Evaluation

For a plan-level analysis, BAAQMD requires the following:

- Overlay zones around existing and planned sources of TACs,
- Overlay zones of at least 500 feet from all freeways and high volume roads.

For a plan-level analysis, a project must also identify goals, policies, and objectives to minimize potential impacts and create overlay zones for sources of TACs and receptors.[40]

Odors

Project-Level Evaluation

BAAQMD's thresholds for odors are qualitative based on BAAQMD's Regulation 7, Odorous Substances. This rule places general limitations on odorous substances and specific emission limitations on certain odorous compounds. In addition, odors are also regulated under BAAQMD Regulation 1, Rule 1-301, Public Nuisance, which states that no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public; or which endangers the comfort, repose, health or safety of any such persons or the public, or which causes, or has a natural tendency to cause, injury or damage to business or property. Under BAAQMD's Rule 1-301, a facility that receives three or more violation notices within a 30 day period can be declared a public nuisance.

[36] Bay Area Air Quality Management District, 2011 (revised), California Environmental Quality Act Air Quality Guidelines.

[37] Bay Area Air Quality Management District, 2012, Recommended Methods for Screening and Modeling Local Risks and Hazards.

[38] Office of Environmental Health Hazard Assessment (OEHHA), 2003. Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments.

[39] Office of Environmental Health Hazard Assessment (OEHHA), 2015. Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments.

[40] Bay Area Air Quality Management District (BAAQMD), 2010 (Revised 2011). *California Environmental Quality Act Air Quality Guidelines*.

BAAQMD has established odor screening thresholds for land uses that have the potential to generate substantial odor complaints, including wastewater treatment plants, landfills or transfer stations, composting facilities, confined animal facilities, food manufacturing, and chemical plants.[41]

Plan-Level Evaluation

For a plan-level analysis, BAAQMD requires:

- Potential existing and planned location of odors sources to be identified.
- Policies to reduce odors.

4.2.4 IMPACT DISCUSSION

4.2.4.1 METHODOLOGY

This air quality evaluation was prepared in accordance with the requirements of CEQA to determine if significant air quality impacts of the proposed TOD #1 and TOD #2 projects in addition to the impact that are likely to occur in conjunction with the type and scale of development within the overall Specific Plan Update. Criteria air pollutants emissions associated with the proposed Project were calculated using the California Emissions Estimator Model (CalEEMod), Version 2013.2.2. Construction emissions associated with the proposed TOD #1 and TOD #2 projects are based on the construction schedules provided by the applicants for each of the respective projects. A HRA for construction activities was conducted for the proposed Project using Lakes Environmental AERMOD View 8.8.1 (ISCST3 air dispersion model).

AQ-1	The proposed Project would conflict with or obstruct implementation of the applicable air quality plan.

Specific Plan Update

BAAQMD requires a consistency evaluation of a plan with the current AQMP measures. The current AQMP is the *2010 Bay Area Clean Air Plan*. BAAQMD considers project consistency with the AQMP in accordance with the following:

- Does the project support the primary goals of the AQMP?
- Does the project include applicable control measures from the AQMP?
- Does the project disrupt or hinder implementation of any AQMP control measures?
- A comparison that the project VMT or vehicle trip increase is less than or equal to the projected population increase.

[41] Bay Area Air Quality Management District (BAAQMD), 2010 (Revised 2011). *California Environmental Quality Act Air Quality Guidelines*.

2010 Bay Area Clean Air Plan Goals

The primary goals of the *2010 Bay Area Clean Air Plan* are to attain the State and Federal AAQS, reduce population exposure and protect public health in the Bay Area, and reduce GHG emissions and protect the climate.

Attain Air Quality Standards

BAAQMD's *2010 Bay Area Clean Air Plan* strategy is based on regional population and employment projections in the Bay Area compiled by ABAG. Demographic trends incorporated into the *Plan Bay Area* determine VMT in the Bay Area, which BAAQMD uses to forecast future air quality trends. The SFBAAB is currently designated a nonattainment area for O_3, $PM_{2.5}$, and PM_{10} (State AAQS only).

Growth under the proposed Specific Plan Update would occur incrementally over an approximately 25-year process. The anticipated growth from the proposed Specific Plan Update is within the population and employment projections identified by ABAG for the city, as discussed further in Chapter 4.11, Population and Housing, of this Draft EIR. Therefore, emissions resulting from implementation of the proposed Specific Plan Update are included in BAAQMD's projections, and future development allowed by the Specific Plan Update would not hinder BAAQMD's ability to attain the California or National AAQS. Accordingly, impacts would be *less than significant*.

Reduce Population Exposure and Protect Public Health

As identified in the discussion of community risk and hazards (see AQ-4 below), new sensitive land uses could be near major sources of TACs. Adherence to BAAQMD regulations would ensure that new sources of TACs do not expose populations to significant health risk; however, siting of land uses near major sources of air pollution is outside the control of BAAQMD. These impacts are addressed under AQ-4, below. Implementation of mitigation identified below to reduce community risk and hazards listed in AQ-4 below would minimize impacts for construction and ensure that risks are minimized for operation; and therefore consistency with these measures are *less than significant*.

Reduce GHG Emissions and Protect the Climate

The GHG emissions impacts of the proposed Specific Plan Update are discussed in Chapter 4.6, Greenhouse Gas Emissions, of this Draft EIR. As described in Chapter 4.6, future development allowed by the proposed Specific Plan Update would be required to adhere to statewide measures that have been adopted to achieve the GHG reduction targets of Assembly Bill 32. In addition, the proposed Specific Plan Update is consistent with regional strategies for infill development identified by the MTC/ABAG in the *Plan Bay Area*. The proposed Specific Plan Update would achieve the BAAQMD efficiency target of 4.6 metric tons of GHG emissions per service population (residents plus employees). Consequently, the proposed Specific Plan Update is consistent with the goal of the *2010 Bay Area Clean Air Plan* to reduce GHG emissions and protect the climate, and the impact would be *less than significant*.

2010 Bay Area Clean Air Plan Control Measures

Table 4.2-7 identifies the control measures included in the *2010 Bay Area Clean Air Plan*.

TABLE 4.2-7 CONTROL MEASURES FROM THE 2010 BAY AREA CLEAN AIR PLAN

Type	Measure Number / Title	Consistency
Stationary and Area Sources Control Measures	▪ SSM 1 – Metal Melting Facilities ▪ SSM 2 – Digital Printing ▪ SSM 3 – Livestock Waste ▪ SSM 4 – Natural Gas Processing and Distribution ▪ SSM 5 – Vacuum Trucks ▪ SSM 6 – General Particulate Matter Weight Rate Limitations ▪ SSM 7 – Open Burning ▪ SSM 8 – Coke Calcining ▪ SSM 9 – Cement Kilns ▪ SSM 10 – Refinery Boilers and Heaters ▪ SSM 11 – Residential Fan Type Furnaces ▪ SSM 12 – Space Heating ▪ SSM 13 – Dryers, Ovens, Kilns ▪ SSM 14 – Glass Furnaces ▪ SSM 15 – Greenhouse Gases in Permitting Energy Efficiency ▪ SSM 16 – Revise Regulation 2, Rule 2: New Source Review ▪ SSM 17 – Revise Regulation 2, Rule 5 New Source Review for Air Toxics ▪ SSM 18 – Revise Air Toxics "Hot Spot" Program	Stationary and area sources are regulated directly by BAAQMD. To implement the stationary and area source control measures, BAAQMD adopts/revises rules or regulations to implement the control measures and reduce emissions from stationary and area sources. Because BAAQMD is the implementing agency, new and existing sources of stationary and area sources within the Specific Plan Area would be required to comply with these control measures in the *2010 Bay Area Clean Air Plan*.
Mobile Source Control Measures	▪ MSM A-1 – Promote Clean, Fuel Efficient Light & Medium-Duty Vehicles ▪ MSM A-2 – Zero Emission Vehicle and Plug-in Hybrids ▪ MSM A-3 – Green Fleets (Light Medium & Heavy-Duty Vehicles) ▪ MSM A-4 – Replacement or Repair of High Emitting Vehicles ▪ MSM B-1 – HDV Fleet Modernization ▪ MSM B-2 – Low NOx Retrofits for In-Use Engines ▪ MSM B-3 – Efficient Drive Trains ▪ MSM C-1 – Construction and Farming Equipment ▪ MSM C-2 – Lawn & Garden Equipment ▪ MSM C-3 – Recreational Vessels	Mobile source control measures would reduce emissions by accelerating the replacement of older, dirtier vehicles and equipment through programs such as the BAAQMD's Vehicle Buy-Back and Smoking Vehicle Programs, and by promoting advanced technology vehicles that reduce emissions. The implementation of these measures relies heavily on incentive programs, such as the Carl Moyer Program and the Transportation Fund for Clean Air, to achieve voluntary emission reductions in advance of or in addition to CARB requirements. CARB has new regulations that require the replacement or retrofit of on-road trucks, construction equipment, and other specific, diesel-powered equipment. The proposed Specific Plan Update would not hinder the ability of BAAQMD to implement these regional programs.
Transportation Control Measures	▪ TCM A-1 – Improve Local and Area-wide Bus Service ▪ TCM A-2 – Improve Local and Regional Rail Service ▪ TCM B-1 – Implement Freeway Performance Initiative ▪ TCM B-2 – Improve Transit Efficiency and Use	Transportation control measures (TCM) are strategies to reduce vehicle trips, vehicle use, VMT, vehicle idling, and traffic congestion for the purpose of reducing motor vehicle emissions. Although most of the TCMs are implemented at the regional level — that is, by MTC or Caltrans — the *2010 Bay Area Clean Air Plan* relies on local communities to

TABLE 4.2-7 CONTROL MEASURES FROM THE 2010 BAY AREA CLEAN AIR PLAN

Type	Measure Number / Title	Consistency
	▪ TCM B-3 – Bay Area Express Land Network ▪ TCM B-4 – Goods Movement Improvements and Emission Reduction Strategies ▪ TCM C-1 – Support Voluntary Employer-Based Trip Reduction Program ▪ TCM C-2 – Implement Safe Routes to Schools and Safe Routes to Transit ▪ TCM C-3 – Promote Rideshare Service and Incentives ▪ TCM C-4 – Conduct Public Outreach and Education ▪ TCM C-5 – Promote Smart Driving/Speed Moderation ▪ TCM D-1 – Improve Bicycle Access and Facilities ▪ TCM D-2 – Improve Pedestrian Access and Facilities ▪ TCM D-3 – Support Local Land Use Strategies ▪ TCM E-1 – Value Pricing Strategies ▪ TCM E-2 – Parking Pricing and Management ▪ TCM E-3 – Implement Transportation Pricing Reform	assist with implementation of some measures. The proposed Specific Plan Update includes strategies related to transportation and land use that would assist BAAQMD in meeting the regional goals of the *2010 Bay Area Clean Air Plan*. These strategies cover the follow areas : ▪ Pedestrian Facilities ▪ Bicycle Facilities ▪ Transit Improvements ▪ Vehicle Circulation Improvements ▪ Parking Strategy ▪ Transportation Demand Management Specific strategies included within these areas include widening of sidewalks, enhancement of pedestrian crossings, installation of separated bicycle lanes and parking facilities, accommodation of a bus rapid transit-style service, encouragement of shared parking measures, and development and implementation of near-term TDM programs. The proposed Specific Plan Update includes the following policies related to alternative modes of transportation: ▪ P-CP 1. Provide superior pedestrian access and circulation in the Plan Area, especially to Millbrae Station, by providing sidewalks on both sides of all roadways and adding new routes where feasible. ▪ P-CP 2. Accommodate projected pedestrian volumes by increasing sidewalk widths to a minimum of 10 feet. ▪ P-CP 3. Create a direct pedestrian connection between El Camino Real (including the northbound bus stop on El Camino Real) and the west side Millbrae Station entrance through a pedestrian paseo. ▪ P-CP 4. Enhance pedestrian safety at signalized intersections with pedestrian countdown signals, signal timing that minimizes pedestrian wait times and provides adequate crossing times (3.5 feet per second), crosswalks at all approaches, continental and/or high-visibility crosswalk striping, corner bulbouts, and perpendicular ADA-standard curb cuts on all corners.

TABLE 4.2-7 CONTROL MEASURES FROM THE 2010 BAY AREA CLEAN AIR PLAN

Type	Measure Number / Title	Consistency
		▪ P-CP 5. Design all streets to provide an attractive pedestrian and visual environment, including by adding pedestrian-scale lighting, benches, and street furniture. ▪ P-CP 6. Improve bicycle access to Millbrae Station and bicycle connections among the surrounding Plan Area land uses through a system of on-street and off-street bicycle facilities including Class I bicycle paths and Class II bicycle lanes. ▪ P-CP 7. Increase bicycle visibility to other road users through enhanced treatments at intersections, including bicycle signal detection (using bicycle-oriented loop detectors or push buttons) and colored pavement markings. ▪ P-CP 8. Provide secure, short- and long-term bicycle parking facilities at the Millbrae Station and at all developments. ▪ P-CP 9. Provide wayfinding signage in the Plan Area for all modes, with emphasis at the nearest entrances and exits, and web-available maps for users, as required in Chapters 6 and 7 of this Specific Plan. ▪ P-CP 10. Require development projects in the vicinity of the station to provide wayfinding signage along wayfinding paths, which include all streets and paseos within the Plan Area, major intersections, and designated bicycle routes. ▪ P-CP 11. Accommodate kiss-n-ride (passenger pick-up and drop-off) and taxis near station entrances on both the east side and west side of the Millbrae Station. ▪ P-CP 12. Provide bus and shuttle transfer facilities near station entrances on both the east side and west side of the Millbrae Station to accommodate the peak projected vehicles to support bus and shuttle as a priority access mode to BART, Caltrain, and future rail service, such as High Speed Rail (HSR). ▪ P-CP 13. Accommodate SamTrans Route ECR bus service by enhancing stops at Linden Avenue (El Camino Real) northbound at pedestrian paseo) and Murchison Drive (El Camino Real) northbound and southbound) and by providing a deviated route southbound (off El Camino Real) on California Drive Extension with a stop at the pedestrian paseo near the station entrance. ▪ P-CP 14. Coordinate with SamTrans, the Peninsula Corridor Joint Powers

TABLE 4.2-7 CONTROL MEASURES FROM THE 2010 BAY AREA CLEAN AIR PLAN

Type	Measure Number / Title	Consistency
		Board and BART to ensure implementation of all Millbrae station area improvements. ▪ P-CP 15. Extend California Drive from Linden Avenue north to intersect El Camino Real at Victoria Ave. ▪ P-CP 16. Expand the South Station Road as a two-way public street connecting from the station entrance to Adrian Road. ▪ P-CP 17. Operate Victoria Avenue between El Camino Real and Broadway as a two-way roadway. Add special paving treatments and pedestrian and bicycle facilities to emphasize this critical connection between Downtown and Millbrae Station. ▪ P-CP 18. Encourage the shared use of station area parking facilities for off-peak users. For example, drivers visiting restaurants in the evening could use station area parking during evening hours. ▪ P-CP 19. Establish parking standards that are adequate to serve new development but encourage the use of transit and alternate modes. ▪ P-CP 20. Explore the feasibility and desirability of a residential permit parking program to manage potential spillover parking from the Millbrae Station in the residential areas immediately adjacent to the Plan Area. ▪ P-CP 21. Design and locate parking facilities to be compatible with adjacent areas and to reinforce the pedestrian environment. ▪ P-CP 22. Require new developments within the Plan Area to accommodate alternative modes of transportation and to provide support facilities for bicyclists, such as showers and changing areas. ▪ P-CP 23. Require Plan Area employers to prepare Transportation Demand Management (TDM) Plans that include measures to increase the number of employees walking, biking, using transit, or ridesharing (using carpools and vanpools) as commute modes and to reduce vehicle congestion. Where future projects have the potential to impact facilities under the Congestion Management Plan, the TDM Plan shall meet the current City/County Association of Governments of San Mateo County (C/CAG) requirements to reduce the number of trips on the CMP roadway network be approved by both the City and

TABLE 4.2-7 CONTROL MEASURES FROM THE 2010 BAY AREA CLEAN AIR PLAN

Type	Measure Number / Title	Consistency
		C/CAG. ▪ P-CP 24. Require site-specific transportation studies to address on-site circulation, driveway designs, loading, access, and safety for all modes as part of the development review process. ▪ P-CP 25. Plan for and implement public parking on the west side of the BART/Caltrain Station should transit parking be lost due to the development of the BART parking lot on the east side of the station.
Land Use and Local Impact Control Measures	▪ LUM 1 – Goods Movement ▪ LUM 2 – Indirect Source Review ▪ LUM 3 – Enhanced CEQA Program ▪ LUM 4 – Land Use Guidelines ▪ LUM 5 – Reduce Risk in Impacted Communities ▪ LUM 6 – Enhanced Air Quality Monitoring	The proposed Specific Plan Update includes strategies related to transportation and land use that would assist BAAQMD in meeting the regional goals of the *2010 Bay Area Clean Air Plan*. These strategies cover the follow areas : ▪ Pedestrian Facilities ▪ Bicycle Facilities ▪ Transit Improvements ▪ Vehicle Circulation Improvements ▪ Parking Strategy ▪ Transportation Demand Management Specific strategies included within these areas include widening of sidewalks, enhancement of pedestrian crossings, installation of separated bicycle lanes and parking facilities, accommodation of a bus rapid transit-style service, encouragement of shared parking measures, and development and implementation of near-term TDM programs.
Energy and Climate Control Measures	▪ ECM 1 – Energy Efficiency ▪ ECM 2 – Renewable Energy ▪ ECM 3 – Urban Heat Island Mitigation ▪ ECM 4 – Tree Planting	The *2010 Bay Area Clean Air Plan* also includes measures to reduce energy use, water use, and waste generation. Projects would also be required to comply with the California Green Building Standards Code and the current Building and Energy Efficiency Standards of Title 24 for energy efficiency. In addition, the proposed Specific Plan Update includes the following policies related to energy use and water efficiency: ▪ P-UD 4. Require new development to employ sustainable building and site design principles, such as Leadership in Energy and Environmental Design (LEED), as promulgated by the U.S. Green Building Council, or other acceptable standards.

TABLE 4.2-7 CONTROL MEASURES FROM THE 2010 BAY AREA CLEAN AIR PLAN

Type	Measure Number / Title	Consistency
		Sustainable building and site design principles include minimizing impervious surfaces, orienting toward solar access, and incorporating energy-efficient elements. ▪ P-UTIL 3. Reduce water consumption through a program of water conservation measures. ▪ P-UTIL 10. Incorporate energy conserving design and equipment into new development in order to promote energy conservation. ▪ P-OS 5. Require open spaces and parks to incorporate sustainability measures, such as including native plant species, drought tolerant plants that require minimal irrigation, permeable paving, solar-powered lighting, and other similar features.
Further Study Control Measures	▪ FSM 1 – Adhesives and Sealants ▪ FSM 2 – Reactivity in Coating and Solvents ▪ FSM 3 – Solvent Cleaning and Degreasing Operations ▪ FSM 4 – Emissions from Cooling Towers ▪ FSM 5 – Equipment Leaks ▪ FSM 6 – Wastewater from Coke Cutting ▪ FSM 7 – SO_2 from Refinery Processes ▪ FSM 8 – Reduce Emission from LPG, Propane, Butane, and other Pressurized Gases ▪ FSM 9 – Greenhouse Gas Mitigation in BACT and TBACT Determinations ▪ FSM 10 Further Reductions from Commercial Cooking Equipment ▪ FSM 11 – Magnet Source Rule ▪ FSM 12 – Wood Smoke ▪ FSM 13 – Energy Efficiency and Renewable Energy ▪ FSM 14 – Winery Fermentation ▪ FSM 15 – Composting Operations ▪ FSM 16 – Vanishing Oils and Rust Inhibitors ▪ FSM 17 – Ferry System Expansion ▪ FSM 18 – Greenhouse Gas Fee	The majority of the further study control measures apply to sources regulated directly by BAAQMD. Because BAAQMD is the implementing agency, new and existing sources of stationary and area sources in the Specific Plan Area would be required to comply with these additional further study control measures in the *2010 Bay Area Clean Air Plan*.

Source: Bay Area Air Quality Management District, 2011 Revised, *California Environmental Quality Act Air Quality Guidelines*.

Include Applicable Control Measures from the AQMP

One of the Guiding Principles of the proposed Specific Plan Update is to provide a mix of uses near the Millbrae Station that will draw an array of transit users to live, work, and/or shop without relying on an automobile. The proposed Specific Plan Update also promotes infill development and improves pedestrian and bicycle circulation. As shown in Table 4.2-7, implementation of the proposed Specific Plan Update would be consistent with the *2010 Bay Area Clean Air Plan*, and the impacts due to inconsistency would be *less than significant*.

Disrupt or Hinder Implementation of any AQMP Control Measures

As identified in Table 4.2-7, the proposed Specific Plan Update would not hinder BAAQMD from implementing the control measures in the *2010 Bay Area Clean Air Plan*. Impacts are *less than significant*.

Regional Growth Projections for VMT and Population and Employment

Future development allowed by the proposed Specific Plan Update would result in additional sources of criteria air pollutants. Growth accommodated within the Specific Plan Area would occur over 25 years or longer. As a result, BAAQMD's approach to evaluating impacts from criteria air pollutants generated by a plan's long-term growth is done by comparing population and employment estimates to the VMT estimates. This is because BAAQMD's AQMP plans for growth in the SFBAAB are based on regional population and employment projections identified by ABAG and growth in VMT identified by CCTA. Changes in regional, community-wide emissions in the Specific Plan Area could affect the ability of BAAQMD to achieve the air quality goals in the AQMP. Consequently, air quality impacts for a plan-level analysis are based on consistency with the regional growth projections.

VMT estimates based on data provided by Fehr & Peers were calculated for the proposed Specific Plan Update. Table 4.2-8 compares the projected increase in service population with the projected increases in total VMT and per capita VMT. VMT estimates are sensitive to changes in land use. Generally, land uses that reflect a more balanced jobs-housing ratio result in lower per capita VMT. As shown in Table 4.2-8, the proposed Specific Plan Update would result in a 71 percent decrease in VMT per capita. Daily VMT in the Specific Plan Area would increase at a lower rate (95 percent) than would the service population (573 percent). BAAQMD's AQMP requires that the VMT increase be less than or equal to the projected population increase from the proposed Specific Plan Update (e.g. generate the same or less VMT per capita). As shown in Table 4.2-8, implementation of the proposed Specific Plan Update would result in lower VMT per capita. Additionally, future projects under the Specific Plan Update would be required to comply with Specific Plan Update Policy CP 23, which requires Specific Plan Area employers to prepare TDM Plans that include measures to increase the number of employees walking, biking, using transit, or ridesharing (using carpools and vanpools) as commute modes and to reduce vehicle congestion; therefore, further contributing to reduced VMT from future projects in the Specific Plan Area. Accordingly, impacts would be *less than significant*.

Significance Without Mitigation: Less than significant.

TABLE 4.2-8 COMPARISON OF THE CHANGE IN SERVICE POPULATION AND VMT IN THE SPECIFIC PLAN AREA

Category	Existing	Project	Change	Percent Change
Population	816	4,640	3,824	469%
Employment	1,002	7,600	6,598	658%
Total Service Population (SP)	1,818	12,240	10,422	573%
VMT per Day	106,218	206,783	100,565	95%
VMT per SP per Day	58.4	16.9	-41.5	-71%

Notes: Average VMT per trip and total trips is provided by Fehr & Peers. Population and employment numbers do not exactly match the numbers shown in Chapter 3, Project Description, of this Draft EIR due to rounding of households and non-residential square feet, on which population and employment estimates were based.

TOD #1 Project

Large projects that exceed regional employment, population, and housing planning projections have the potential to be inconsistent with the regional inventory compiled as part of BAAQMD's *2010 Bay Area Clean Air Plan*. The proposed TOD #1 project would develop 500 dwelling units and is projected to result in the creation of 1,148 new jobs. Thus, it is considered a regionally significant project that would affect regional VMT and warrant Intergovernmental Review by MTC pursuant to the CEQA Guidelines Section 15206.[42]

Development of the proposed TOD #1 project would not result in the increase of population or employment (1,325 new residents and 1,148 new jobs) foreseen in City or regional planning efforts (see Chapter 4.11, Population and Housing, of this Draft EIR). However, as the proposed TOD #1 project would operate concurrently with the proposed TOD #2 project, the combined growth associated with these two projects are considered to evaluate the total impacts to air quality. Growth associated with both the proposed TOD #1 and TOD #2 projects (2,176 new residents and 2,016 new jobs) would exceed the 1,270 employment increase projected by year 2020.[43] Additionally, growth associated with both the proposed TOD #1 and TOD #2 projects would exceed the overall growth (i.e. residents and jobs) projected for the city by year 2020. Thus, development of the proposed TOD #1 project when considered with the growth associated with the proposed TOD #2 project would have the potential to substantially affect housing, employment, and population projections within the region, which is the basis of the *2010 Bay Area Clean Air Plan* projections.

Similarly, while operational phase emissions associated with the proposed TOD #1 project would not exceed BAAQMD's regional operational-phase significance thresholds, the combined emissions from the proposed TOD

[42] Per this section of the CEQA Guidelines, a project can be considered a regionally significant project if it develops more than 500 dwelling units or creates more than 1,000 new jobs.

[43] ABAG projects 2,668 new residents and 1,270 new jobs in Millbrae between 2010 and 2020. See Table 4.11-2 in Chapter 4.11 of this Draft EIR.

#1 and TOD #2 projects would exceed the thresholds. These thresholds are established to identify projects that have the potential to generate a substantial amount of criteria air pollutants. Because the proposed TOD #1 and TOD #2 projects combined would exceed these thresholds, the proposed TOD #1 project would be considered by BAAQMD to be a substantial emitter of criteria air pollutants.

As described above under the Specific Plan Update discussion, the proposed TOD #1 project would be required to comply with Specific Plan Update Policy P-CP 23, which requires Specific Plan Area employers to provide TDM measures to reduce VMT; thus, contributing to the reduction of emissions. However, the effectiveness of any TDM measure is dependent on the level of participation in the TDM Plan. Because the effectiveness of the required TDM Plan would remain unknown, the emissions could still exceed the thresholds. Therefore, it would conflict with or obstruct implementation of the *2010 Bay Area Clean Air Plan* and impacts would be considered *significant*.

Impact AQ-TOD#1-1: The proposed TOD #1 project, when considered with the proposed TOD #2 project, would exceed the projected growth increase for the city and exceed BAAQMD's regional significance thresholds. Therefore, it would conflict with or obstruct implementation of the *2010 Bay Area Clean Air Plan*.

Significance Without Mitigation: Significant and Unavoidable. While the growth forecasts of the proposed TOD #1 and TOD #2 projects combined would exceed the projected growth increase for Millbrae by year 2020, these TOD projects would be consistent with the regional planning objectives established for the Bay Area. The proposed TOD projects are representative of "smart growth" development that reflects better jobs-housing balance, increased preservation of open space, and greater development and redevelopment in urban core and transit-accessible areas throughout their region. Furthermore, while future projects would be required to comply with the Specific Plan Update Circulation and Parking policies listed in Table 4.2-7, which could potentially reduce VMT and associated emissions impacts in the Specific Plan Area by providing improved pedestrian, bicycle and transit and opportunities for alternative modes of transportation for employees, it cannot be assured that the reductions would sufficiently reduce the impact. Given the nature of the proposed TOD projects, no additional mitigation measures are available to reduce emissions, and impacts would be *significant and unavoidable*.

TOD #2 Project

As discussed above, per CEQA Guidelines Section 15206, a project would be considered a regionally significant project if it develops more than 500 hotel rooms, 500,000 square feet of retail space, 250,000 square feet of office space, or creates 1,000 or more new jobs. The proposed TOD #2 project would develop less than 500 hotel rooms and dwelling units. Additionally, it would also develop less than 500,000 square feet and 250,000 square feet of retail and office space, and generate less than 1,000 new jobs, respectively. Thus, it is not considered a regionally significant project that would affect regional VMT and warrant Intergovernmental Review by MTC pursuant to the CEQA Guidelines (CEQA Guidelines Section 15206). In addition, it would not result in the increase of population or housing foreseen in City or regional planning efforts (see Chapter 4.11, Population and Housing, of this Draft EIR). However, as discussed under the TOD #1 project above, the proposed TOD #2 project would operate concurrently with the proposed TOD #1 project, development of the proposed TOD #2 project combined with TOD #1, would have the potential to substantially affect housing, employment, and population projections within the region, which is the basis of the *2010 Bay Area Clean Air Plan* projections.

Similarly, while operational phase emissions associated with the proposed TOD #2 project would not exceed BAAQMD's regional operational-phase significance thresholds, the combined emissions from the proposed TOD #1 and TOD #2 projects would exceed the thresholds and like the TOD #1 project, the proposed TOD #2 project would be considered by BAAQMD to be a substantial emitter of criteria air pollutants.

Like the TOD #1 project, the TOD #2 project would be required to comply with the Specific Plan Update Circulation and Parking policies listed in Table 4.2-7, which could potentially reduce VMT and associated emissions impacts in the Specific Plan Area by providing improved pedestrian, bicycle and transit and opportunities for alternative modes of transportation for employees, it cannot be assured that the reductions would sufficiently reduce the impact; therefore, the emissions could still exceed the thresholds. Therefore, it would conflict with or obstruct implementation of the *2010 Bay Area Clean Air Plan* and impacts would be considered *significant*.

Impact AQ-TOD#2-1: The proposed TOD #2 project, when considered with the proposed TOD #1 project would exceed the project growth increase for the city and exceed BAAQMD's regional significance thresholds. Therefore, it would conflict with or obstruct implementation of the *2010 Bay Area Clean Air Plan*.

Significance Without Mitigation: Significant and Unavoidable. As with the TOD #1 project, no additional mitigation measures are available to reduce emissions, and impacts would be *significant and unavoidable*.

In summary, the proposed Specific Plan Update would support the primary goals of the *2010 Bay Area Clean Air Plan*, however operational-phase emissions of proposed TOD #1 and TOD #2 projects when combined would exceed the BAAQMD's regional significance threshold and obstruct implementation of the *2010 Bay Area Clean Air Plan*.

AQ-2	The proposed Project would violate air quality standard or contribute substantially to an existing or projected air quality violation in Millbrae.

BAAQMD has identified thresholds of significance for criteria pollutant emissions and criteria air pollutant precursors, including VOC, NO, PM_{10} and $PM_{2.5}$. Development projects below the significance thresholds are not expected to generate sufficient criteria pollutant emissions to violate any air quality standard or contribute substantially to an existing or projected air quality violation. According to BAAQMD's CEQA Guidelines, long-range plans, such as the proposed Specific Plan Update, present unique challenges for assessing impacts. Due to the SFBAAB's nonattainment status for ozone and PM and the cumulative impacts of growth on air quality, these plans almost always have significant, unavoidable adverse air quality impacts.

Specific Plan Update

Construction Emissions

BAAQMD's plan-level guidelines do not require an evaluation of construction emissions for plan-level projects. Future projects under the Specific Plan Update would be required to comply with the following Specific Plan

Update Implementation (IMP) policies, which once adopted, would contribute in reducing construction-related emissions impacts:

- P-IMP 10. Require applicants for new development to prepare a technical assessment evaluating potential project construction-related air quality impacts in conformance with current Bay Area Air Quality Management District's methodology.
- P-IMP 11. Require applicants for new development to prepare and implement construction management plans to control construction-related impacts from fugitive dust, emissions, noise, and traffic. Project construction management plans shall include, but are not limited to, the following:
  - Current Bay Area Air Quality Control Management District (BAAQMD) basic control measures for fugitive dust control in addition to other feasible measures that may be identified in project-level technical air quality assessments, when required;
  - A list of all construction equipment to be used during construction that identifies the make, model, and number of each piece of equipment;
  - Location of construction staging areas for materials, equipment, and vehicles;
  - Notification procedures for adjacent property owners and public safety personnel regarding when major deliveries, detours, and lane closures will occur;
  - Identification of haul routes for movement of construction vehicles that would minimize impacts on vehicular and pedestrian traffic, circulation, and safety; and provision for monitoring surface streets used for haul routes so that any damage and debris attributable to the haul trucks can be identified and corrected by the project sponsors;
  - Provisions for pedestrian and bicycle circulation through the congestion zone;
  - Provisions for removal of trash generated by project construction activity; and
  - A process for responding to, and tracking, complaints pertaining to construction activity, including identification of an on-site complaint manager.

Additionally, future development under the proposed Specific Plan Update would be subject to separate environmental review pursuant to CEQA in order to identify and mitigate potential air quality impacts. Because the details regarding future construction activities, other than for the proposed TOD #1 and TOD #2 projects, are not known at this time — including phasing of future individual projects, construction duration and phasing, and preliminary construction equipment — construction emissions are evaluated qualitatively in accordance with BAAQMD's plan-level guidance.

Construction emissions associated with individual development projects under the proposed Specific Plan Update would increase criteria air pollutants and TACs. BAAQMD has developed project-level thresholds for construction activities. Subsequent environmental review of future development projects would be required to assess potential impacts under BAAQMD's project-level thresholds. Construction emissions from buildout of future projects in the Specific Plan Area would primarily be 1) exhaust emissions from off-road diesel-powered construction equipment; 2) dust generated by demolition, grading, earthmoving, and other construction activities; 3) exhaust

emissions from on-road vehicles and 4) off-gas emissions of VOCs from application of asphalt, paints, and coatings.

Existing federal, State, and local regulations, and policies and strategies of the proposed Specific Plan Update described throughout this chapter protect local and regional air quality. Additionally, Policies- IMP 10 and IMP 11 of the Specific Plan Update would require development projects to prepare a technical assessment evaluating potential project construction-related air quality impacts and a construction management plan that includes the necessary feasible measures to reduce construction-related air quality impacts. Measures that could be included in the construction management plan include, but are not limited to the following:

- Use of construction equipment rated by the United States Environmental Protection Agency as having Tier 3 (model year 2006 or newer) or Tier 4 (model year 2008 or newer) emission limits, applicable for engines between 50 and 750 horsepower.
- Ensure that construction equipment is properly serviced and maintained to the manufacturer's standards.
- Limit nonessential idling of construction equipment to no more than five consecutive minutes.
- Water all active construction areas at least twice daily, or as often as needed to control dust emissions. Watering shall be sufficient to prevent airborne dust from leaving the site. Increased watering frequency may be necessary whenever wind speeds exceed 15 mph. Reclaimed water shall be used whenever possible.
- Pave, apply water twice daily or as often as necessary to control dust, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites.
- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard (i.e. the minimum required space between the top of the load and the top of the trailer).
- Sweep daily (with water sweepers using reclaimed water if possible) or as often as needed all paved access roads, parking areas and staging areas at the construction site to control dust.
- Sweep public streets daily (with water sweepers using reclaimed water if possible) in the vicinity of the project site, or as often as needed, to keep streets free of visible soil material.
- Hydroseed or apply non-toxic soil stabilizers to inactive construction areas.
- Enclose, cover, water twice daily, or apply non-toxic soil binders to exposed stockpiles (dirt, sand, etc.).
- Limit vehicle traffic speeds on unpaved roads to 15 miles per hour.
- Replant vegetation in disturbed areas as quickly as possible.

While compliance with these regulations would reduce construction-related impacts, fugitive dust (PM_{10} and $PM_{2.5}$) levels downwind of actively disturbed areas during construction or overlapping construction activities could violate air quality standards or contribute substantially to an existing or projected air quality violation and expose sensitive receptors to elevated concentrations of pollutants during construction activities. Consequently, impacts are *significant*.

Impact AQ-SP-2.1: Future projects under the Specific Plan Update could result in fugitive dust (PM_{10} and $PM_{2.5}$) from construction activities that could violate air quality standards or contribute substantially to an existing or projected air quality violation and expose sensitive receptors to elevated concentrations of pollutants during construction activities.

Significance Without Mitigation: Significant and Unavoidable. While compliance with the proposed Specific Plan Update Policies IMP 10 and IMP 11 would require adherence to the current BAAQMD's basic control measures for reducing fugitive dust to less-than-significant levels, applicants for future development in the Specific Plan Area could generate construction exhaust emissions in excess of the BAAQMD significance thresholds. Buildout of the Specific Plan Area would occur over a period of approximately 25 years or longer and construction time frames and equipment for future individual site specific projects are not available. Additionally, there is a potential for multiple developments to be constructed at any one time, resulting in significant construction-related emissions. An analysis of emissions generated from the construction of specific future projects under the proposed Specific Plan Update would be required to evaluate emissions compared to BAAQMD's project-level significance thresholds during individual environmental review. Therefore, construction-related emissions could still exceed the regional significance thresholds for construction. The identification of this program-level impact does not preclude the finding of less-than-significant impacts for subsequent projects that comply with BAAQMD screening criteria or meet applicable thresholds of significance. However, due to the programmatic nature of the proposed Specific Plan Update, no additional mitigation measures are available and the impact is considered *significant and unavoidable*.

Operation Emissions

Although BAAQMD's CEQA Air Quality Guidelines only require an emissions inventory of criteria air pollutants for project-level analyses, enough information regarding the buildout of the proposed Specific Plan Update is available; thus, an inventory of criteria air pollutants was generated for the proposed Specific Plan Update to identify the magnitude of emissions from buildout of the proposed Specific Plan Update. Table 4.2-7 identifies the emissions associated with buildout of the proposed Specific Plan Update. Subsequent environmental review of development projects would be required to assess potential impacts under BAAQMD's project-level thresholds.

The proposed Specific Plan Update would promote infill development and improve pedestrian and bicycle circulation. In addition, the proposed Specific Plan Update would develop mixed-uses near the existing Millbrae Station that will draw an array of transit users to live, work, and/or shop without relying on an automobile. Furthermore, the proposed Specific Plan Update includes policies that would reduce criteria air pollutant emissions impacts, including the policies listed in Table 4.2-7 above. Specifically, Policy CP 23 requires Specific Plan Area employers to prepare TDM plans to increase the number of employees walking, biking, using transit, or ridesharing (using carpools and vanpools) as commute modes and to reduce vehicle congestion; thus, subsequently reducing emissions.

As shown in Table 4.2-9, buildout of the proposed Specific Plan Update would generate a substantial increase in criteria air pollutant emissions that exceeds the BAAQMD regional significance thresholds for VOC. VOC emissions would primarily be generated from on-site area sources (e.g. landscaping fuel, consumer products) and vehicle trips generated by implementation of the proposed Specific Plan Update. Therefore, this is considered a *significant* impact.

Impact AQ-SP-2.2: Operational phase emissions associated with the proposed Specific Plan Update would exceed BAAQMD's regional operational-phase significance thresholds for VOC.

Significance Without Mitigation: Significant and Unavoidable. While future projects would be required to comply with the Specific Plan Update Circulation and Parking policies listed in Table 4.2-7, which could potentially reduce VMT and associated emissions impacts in the Specific Plan Area by providing improved pedestrian, bicycle and transit and opportunities for alternative modes of transportation for employees, it cannot be assured that the reductions would sufficiently reduce the impact. As previously discussed, no additional mitigation measures are available to reduce emissions, and impacts would be *significant and unavoidable*.

TABLE 4.2-9 CRITERIA AIR POLLUTANT EMISSIONS FORECAST FOR THE PROPOSED SPECIFIC PLAN UPDATE

	Criteria Air Pollutants (average pounds/day)			
Category	VOC	NO_x	PM_{10}	$PM_{2.5}$
Existing				
Area	24	<1	<1	<1
Energy	1	6	<1	<1
Mobile	15	25	48	13
Total	40	31	48	14
Total Tons per Year (tpy)	7 tpy	6 tpy	9 tpy	3 tpy
Proposed Specific Plan Update				
Area	107	1	1	1
Energy	2	20	2	2
Mobile	31	52	100	28
Total	141	43	103	30
Total Tons per Year	26 tpy	13 tpy	19 tpy	6 tpy
Net Change				
Change from Existing Land Uses	101	43	54	16
BAAQMD Average Daily Project-Level Threshold	54	54	82	54
Exceeds Average Daily Threshold	Yes	No	No	No
Change from 2013 Land Uses	18 tpy	8 tpy	10 tpy	3 tpy
BAAQMD Annual Project-Level Threshold	10 tpy	10 tpy	15 tpy	10 tpy
Exceeds Annual Threshold	Yes	No	No	No

Note: Emissions may not total to 100 percent due to rounding.
Source: CalEEMod 2013.2.2 Based on 2020 emission rates.

TOD #1 Project

Construction Emissions

Construction activities produce combustion emissions from various sources, such as onsite heavy-duty construction vehicles, vehicles hauling materials to and from the site, and motor vehicles transporting the construction crew. Site preparation activities produce fugitive dust emissions (PM_{10} and $PM_{2.5}$) from demolition and soil-disturbing activities, such as grading and excavation. Air pollutant emissions from construction activities onsite would vary daily as construction activity levels change.

The proposed TOD #1 project would result in overlapping construction phases and substantial demolition debris and soil export that would occur proximate to adjacent existing sensitive land uses to the northwest of the proposed TOD #1 project site. Thus, the BAAQMD screening criteria for construction-related impacts would not be met and, consistent with Specific Plan Update Implementation Policy IMP 10, a quantified analysis of the proposed TOD #1 project's construction emissions was conducted using CalEEMod based on information provided and verified by the proposed TOD #1 project applicant.

Fugitive Dust

As identified above, the proposed TOD #1 project would involve building and asphalt demolition. In addition, ground disturbing activities would generate fugitive dust. Fugitive dust emissions (PM_{10} and $PM_{2.5}$) are considered to be significant unless the proposed TOD #1 project implements the BAAQMD's Best Management Practices (BMPs) for fugitive dust control during construction. PM_{10} is typically the most significant source of air pollution from the dust generated from construction. The amount of dust generated during construction would be highly variable and is dependent on the amount of material being demolished, the type of material, moisture content, and meteorological conditions. If uncontrolled, PM_{10} and $PM_{2.5}$ levels downwind of actively disturbed areas could possibly exceed State standards. Compliance with Specific Plan Update Implementation Policy IMP 11, as described above under the Specific Plan Update discussion, would ensure impacts would be *less than significant*.

Significance Without Mitigation: Less than Significant.

Construction Exhaust Emissions

Construction emissions are based on the preliminary construction schedule developed for the proposed TOD #1 project. The proposed TOD #1 project is estimated to take approximate 4 years to complete and full buildout is anticipated to occur at the end of year 2019. To determine potential construction-related air quality impacts, criteria air pollutants generated by the proposed TOD #1 project-related construction activities are compared to the BAAQMD significance thresholds in Table 4.2-10 for average daily emissions. Average daily emissions are based on the annual construction emissions divided by the total number of active construction days.

TABLE 4.2-10 TOD #1 CONSTRUCTION-RELATED CRITERIA AIR POLLUTANT EMISSIONS ESTIMATES

	Criteria Air Pollutants (tons/year)[a]					
Year	VOC	NO_x	Fugitive PM_{10}[b]	Exhaust PM_{10}	Fugitive $PM_{2.5}$[b]	Exhaust $PM_{2.5}$
Total TOD #1 2016-2019 Construction Emissions	7	21	1	1	<1	1
Total Combined TOD #1 and #2 Construction Emissions	13	39	3	2	1	2
	Criteria Air Pollutants (average lbs/day)[a]					
TOD #1 Average Daily Construction Emissions[c]	14	41	2	2	1	2
Combined TOD #1 and TOD #2 Average Daily Construction Emissions[d]	11	34	1	2	1	2
BAAQMD Average Daily Project-Level Threshold	54	54	BMPs	82	BMPs	54
Exceeds Average Daily Threshold	No	No	NA	No	NA	No

Note: Emissions may not total to 100 percent due to rounding.
BMP: Best Management Practices; NA: not applicable
a. Construction phasing and equipment mix are based on the preliminary information provided by the Applicant. Where specific information regarding Project-related construction activities was not available, construction assumptions were based on CalEEMod defaults, which are based on construction surveys conducted by South Coast Air Quality Management District of construction equipment and phasing for comparable projects.
b. Includes implementation of best management practices for fugitive dust control required by BAAQMD as mitigation, including watering disturbed areas a minimum of two times per day, reducing speed limit to 15 miles per hour on unpaved surfaces, and street sweeping.
c. Average daily emissions are based on the total construction emissions divided by the total number of active construction days. The total number of construction days is estimated to be 1,021.
d. Average daily emissions are based on the total construction emissions divided by the total number of active construction days. The total number of construction days is estimated to be 1,261.
Source: CalEEMod 2013.2.2.

As shown in Table 4.2-10, criteria air pollutant emissions from construction equipment exhaust associated with the proposed TOD #1 project in addition to the combined emissions of the proposed TOD #1 and TOD #2 projects would not exceed the BAAQMD average daily thresholds. Therefore, construction-related criteria pollutant emissions from exhaust are *less than significant*.

Significance Without Mitigation: Less than significant.

Operational Emissions

Long-term air pollutant emissions generated by residential and commercial land uses are typically associated with the burning of fossil fuels in cars (mobile sources), energy use for cooling and heating, and landscape equipment use and household products (area sources). The existing land uses currently generate criteria air pollutants from transportation, energy, and area sources. BAAQMD's CEQA Guidelines identify screening criteria for operation-related criteria air pollutant emissions for a low-rise apartment of 451 dwelling units, retail of up to 99,000 building square feet, and general office space of 346,000 building square feet. Development of these types of land uses that exceed these specifications have the potential to generate a substantial increase in criteria air pollutant emissions

and would need further analysis. The proposed TOD #1 project would develop up to 500 multi-family dwelling units and up to 32,000 and 267,000 building square feet of retail and commercial space, respectively. While the retail and commercial components of the proposed TOD #1 project would not exceed their respective screening criteria, the proposed TOD #1 project would construct more than 451 dwelling units. Additionally, per BAAQMD guidance, the screening criteria are not applicable to mixed-use projects. Thus, operational-phase emissions associated with the proposed TOD #1 project were quantified using CalEEMod and shown in Table 4.2-11.

TABLE 4.2-11 TOD #1 OPERATION-RELATED CRITERIA AIR POLLUTANT EMISSIONS ESTIMATES

	Criteria Air Pollutants (tons/year)			
Category	VOC	NO_x	PM_{10}	$PM_{2.5}$
TOD #1				
Area Sources	5	<1	<1	<1
Energy Use	<1	1	<1	<1
Mobile Sources	3	6	6	2
Total TOD #1 Annual Emissions	8	6	6	2
Total Combined TOD #1 and TOD #2 Annual Emissions	16	13	13	4
BAAQMD Annual Emissions Threshold	10	10	15	10
Exceeds Annual Thresholds?	Yes	Yes	No	No
	Criteria Air Pollutants (average lbs/day)			
Area Sources	26	<1	<1	<1
Energy Use	<1	3	<1	<1
Mobile Sources	16	31	35	10
TOD #1 Average Daily Emissions	42	35	35	10
Combined TOD #1 and TOD #2 Average Daily Emissions	87	70	71	20
BAAQMD Average Daily Project-Level Threshold	54	54	82	54
Exceeds Average Daily Threshold?	Yes	Yes	No	No

Note: Emissions may not total to 100 percent due to rounding.
Source: CalEEMod 2013.2.2.

As shown in the Table 4.2-11, operation of the proposed TOD #1 project would not exceed BAAQMD's regional significance thresholds.

However, air quality impacts are cumulative impacts. The policies under the proposed Specific Plan Update are applicable to the proposed TOD #1 and TOD #2 projects. In addition, buildout of the proposed TOD #1 and TOD #2 projects would occur over the same planning horizon. Therefore, this EIR analyzes the combined impacts associated with both the proposed TOD #1 and TOD #2 projects operating in the 2020 horizon year. As shown in Table 4.2-11, emissions combined with the proposed TOD #2 project would exceed BAAQMD's annual and average daily emissions thresholds for VOC and NO_X and require mitigation to reduce overall impacts. The primary sources of these two pollutants would be from area (e.g. use of household consumer products) and mobile sources. Therefore, impacts to the regional air quality from operation-related emissions are considered *significant*.

Impact AQ-TOD#1-2: Operation of the proposed TOD #1 project would generate emissions that exceed BAAQMD's regional operational-phase significance thresholds for VOC and NO_X.

Significance Without Mitigation: Significant and Unavoidable. While compliance with the Specific Plan Update Circulation and Parking policies listed in Table 4.2-7, which could potentially reduce VMT and associated emissions impacts in the Specific Plan Area by providing improved pedestrian, bicycle and transit and opportunities for alternative modes of transportation for employees, it cannot be assured that the reductions would sufficiently reduce the impact. As previously discussed, no additional mitigation measures are available to reduce emissions, and impacts would be significant and unavoidable.

TOD #2 Project

Construction Emissions

Construction activities produce combustion emissions from various sources, such as onsite heavy-duty construction vehicles, vehicles hauling materials to and from the site, and motor vehicles transporting the construction crew. Site preparation activities produce fugitive dust emissions (PM_{10} and $PM_{2.5}$) from demolition and soil-disturbing activities, such as grading and excavation. Air pollutant emissions from construction activities onsite would vary daily as construction activity levels change.

The proposed TOD #2 project would result in overlapping construction subphases and substantial demolition debris and soil export that would occur proximate to existing sensitive land uses. Thus, the BAAQMD screening criteria for construction-related impacts would not be met and, consistent with Specific Plan Update Implementation Policy IMP 10, a quantified analysis of the proposed TOD #2 project's construction emissions was conducted using CalEEMod based on information provided and verified by the proposed TOD #2 project applicant.

Fugitive Dust

As identified above, the proposed TOD #2 project would warrant substantial building and asphalt demolition. In addition, ground disturbing activities would generate fugitive dust. Fugitive dust emissions (PM_{10} and $PM_{2.5}$) are considered to be significant unless the proposed TOD #2 project implements the BAAQMD's BMPs for fugitive dust control during construction. PM_{10} is typically the most significant source of air pollution from the dust generated from construction. The amount of dust generated during construction would be highly variable and is

dependent on the amount of material being demolished, the type of material, moisture content, and meteorological conditions. If uncontrolled, PM_{10} and $PM_{2.5}$ levels downwind of actively disturbed areas could possibly exceed State standards. Compliance with Specific Plan Update Implementation Policy IMP 11, as described above under the Specific Plan Update discussion, would ensure impacts would be *less than significant*.

Significance Without Mitigation: Less than significant.

Construction Exhaust Emissions

Construction emissions are based on the preliminary construction schedule developed for the proposed TOD #2 project. The proposed TOD #2 project is estimated to take approximately five years to complete with an anticipated buildout year of 2020. To determine potential construction-related air quality impacts, criteria air pollutants generated by the proposed TOD #2 project-related construction activities are compared to the BAAQMD significance thresholds in Table 4.2-12 for average daily emissions. Average daily emissions are based on the annual construction emissions divided by the total number of active construction days.

TABLE 4.2-12 TOD #2 CONSTRUCTION-RELATED CRITERIA AIR POLLUTANT EMISSIONS ESTIMATES

	Criteria Air Pollutants (tons/year)[a]					
Year	VOC	NO_x	Fugitive PM_{10}[b]	Exhaust PM_{10}	Fugitive $PM_{2.5}$[b]	Exhaust $PM_{2.5}$
Total TOD #2 2016-2020 Construction Emissions	6	8	2	1	1	1
Total Combined TOD #1 and #2 Construction Emissions	13	39	3	2	1	2
	Criteria Air Pollutants (average lbs/day)[a]					
TOD #2 Average Daily Construction Emissions[c]	9	29	3	1	1	1
Combined TOD #1 and TOD #2 Average Daily Construction Emissions[c]	11	34	1	2	1	2
BAAQMD Average Daily Project-Level Threshold	54	54	BMPs	82	BMPs	54
Exceeds Average Daily Threshold	No	No	NA	No	NA	No

Note: Emissions may not total to 100 percent due to rounding.
BMP: Best Management Practices; NA: not applicable
a. Construction phasing and equipment mix are based on the preliminary information provided by the Applicant. Where specific information regarding Project-related construction activities was not available, construction assumptions were based on CalEEMod defaults, which are based on construction surveys conducted by South Coast Air Quality Management District of construction equipment and phasing for comparable projects.
b. Includes implementation of best management practices for fugitive dust control required by BAAQMD as mitigation, including watering disturbed areas a minimum of two times per day, reducing speed limit to 15 miles per hour on unpaved surfaces, and street sweeping.
c. Average daily emissions are based on the total construction emissions divided by the total number of active construction days. The total number of construction days is estimated to be 1,261.
Source: CalEEMod 2013.2.2.

As shown in Table 4.2-12, criteria air pollutant emissions from construction equipment exhaust associated with the proposed TOD #2 project and the combined emissions of the proposed TOD #1 and TOD #2 projects would not exceed the BAAQMD average daily thresholds. Therefore, construction-related criteria pollutant emissions from exhaust are *less than significant*.

Significance Without Mitigation: Less than significant.

Operational Emissions

The proposed TOD #2 project would develop up to 321 multi-family dwelling units, 116 hotel rooms, and up to 46,935 and 164,535 building square feet of retail and commercial space, respectively. As previously stated, per BAAQMD guidance, the screening criteria developed for individual types of land uses are not applicable to mixed-use projects. Thus, operational-phase emissions associated with the proposed TOD #2 project were quantified using CalEEMod and shown in Table 4.2-13.

TABLE 4.2-13 TOD #2 OPERATION-RELATED CRITERIA AIR POLLUTANT EMISSIONS ESTIMATES

	Criteria Air Pollutants (tons/year)			
Year	VOC	NO_x	PM_{10}	$PM_{2.5}$
TOD #2				
Area Sources	5	<1	<1	<1
Energy Use	<1	<1	<1	<1
Mobile Sources	3	6	7	2
Total TOD #2 Annual Emissions	8	6	7	2
Total Combined TOD #1 and TOD #2 Annual Emissions	16	13	13	4
BAAQMD Annual Emissions Threshold	10	10	15	10
Exceeds Annual Thresholds?	Yes	Yes	No	No
	Criteria Air Pollutants (average lbs/day)			
TOD #2				
Area Sources	27	<1	<1	<1
Energy Use	<1	2	<1	<1
Mobile Sources	17	33	36	10
TOD #2 Average Daily Emissions	45	35	36	10
Combined TOD #1 and TOD #2 Average Daily Emissions	87	70	71	20

TABLE 4.2-13 TOD #2 OPERATION-RELATED CRITERIA AIR POLLUTANT EMISSIONS ESTIMATES

	Criteria Air Pollutants (tons/year)			
Year	VOC	NO_x	PM_{10}	$PM_{2.5}$
BAAQMD Average Daily Project-Level Threshold	54	54	82	54
Exceeds Average Daily Threshold?	Yes	Yes	No	No

Note: Emissions may not total to 100 percent due to rounding.
Source: CalEEMod 2013.2.2.

As shown in Table 4.2-13, operation of the proposed TOD #2 project would not exceed BAAQMD's regional significance thresholds.

However, as discussed under TOD #1 above, the air quality impacts are cumulative impacts. The policies under the proposed Specific Plan Update are applicable to the proposed TOD #1 and TOD #2 projects. In addition, because the buildout of the proposed TOD #1 and TOD #2 projects would occur over the same planning horizon, this EIR analyzes the combined impacts associated with both the proposed TOD #1 and TOD #2 projects operating in the 2020 horizon year. As shown in Table 4.2-13 emissions combined with the proposed TOD #1 project land uses would exceed BAAQMD's annual and average daily emissions thresholds for VOC and NO_X and require mitigation to reduce overall impacts. Same as the TOD #1 project, the primary sources of these two pollutants would be from area (e.g. use of household consumer products) and mobile sources. Therefore, impacts to the regional air quality from operation-related emissions are considered *significant*.

Impact AQ-TOD#2-2: Operation of the proposed TOD #2 project would generate emissions that exceed BAAQMD's regional operational-phase significance thresholds for VOC and NO_X.

Significance Without Mitigation: Significant and Unavoidable. While compliance with the Specific Plan Update Circulation and Parking policies listed in Table 4.2-7, which could potentially reduce VMT and associated emissions impacts in the Specific Plan Area by providing improved pedestrian, bicycle and transit and opportunities for alternative modes of transportation for employees, it cannot be assured that the reductions would sufficiently reduce the impact. As previously discussed, no additional mitigation measures are available to reduce emissions, and impacts would be significant and unavoidable.

AQ-3 Criteria air pollutant emissions associated with buildout of the proposed Project would cumulatively contribute to air quality impacts in the SFBAAB.

This section analyzes potential impacts related to air quality that could occur from the buildout associated with the proposed Specific Plan Update in combination with the regional growth in the air basin. The SFBAAB is currently designated a nonattainment area for California and National O_3, California and National $PM_{2.5}$, and California PM_{10} AAQS. At a plan level, air quality impacts are measured by the potential for a project to exceed BAAQMD's significance criteria and contribute to the State and federal nonattainment designations in the SFBAAB. Any

project that produces a significant regional air quality impact in an area that is in nonattainment adds to the cumulative impact.

Specific Plan Update

The proposed Specific Plan Update's contribution to cumulative air quality impacts is identified under the discussions in the AQ-1 and AQ-2 discussions. The analyses in these sections identify whether the proposed Specific Plan Update would conflict with the *2010 Bay Area Clean Air Plan* (AQ-1) or generate a substantial increase in criteria air pollutants (AQ-2). Although the proposed Specific Plan Update would not conflict with the *2010 Bay Area Clean Air Plan*, it would generate a substantial increase in criteria air pollutant emissions from construction and operational activities. Criteria air pollutant emissions generated by land uses allowed by the proposed Specific Plan Update would exceed the BAAQMD thresholds, as described above under AQ-2. Air quality impacts identified in the discussions of AQ-1 and AQ-2 constitute the proposed Specific Plan Update's contribution to cumulative air quality impacts in the SFBAAB. Consequently, cumulative regional air quality impacts are also *significant*.

Impact AQ-SP-3: Implementation of the proposed Specific Plan Update would exceed BAAQMD's regional significance thresholds.

Significance Without Mitigation: Significant and Unavoidable. Compliance with the policies in the Specific Plan Update would reduce impacts to the maximum extent feasible. However, due to the programmatic nature of the proposed Specific Plan Update, no additional mitigation measures are available. Air pollutant emissions associated with the proposed Specific Plan Update would result in a cumulatively considerable contribution to air quality impacts.

TOD #1 Project

Construction

Regional

As described in AQ-2, Construction Emissions, Fugitive Dust, the proposed TOD #1 project would not have a significant construction impact related to fugitive dust emissions with compliance with Specific Plan Update Implementation Policy IMP 11. Therefore, the proposed TOD #1 project's contribution to cumulative air quality impacts would also be *less than significant*.

Significance With Mitigation: Less than significant.

Localized

Adjacent sensitive land uses could be potentially impacted by construction activities and cumulative emissions of TACs. Criteria pollutants from multiple construction projects would further degrade regional and local air quality. As previously noted, air quality would be temporarily impacted during project-related construction activities. Therefore, construction-related health risk impacts for the proposed TOD #1 project are considered to be *significant*.

Impact AQ-TOD#1-3.1: Construction of the proposed TOD #1 project would result in exceedance of BAAQMD's risk thresholds.

Mitigation Measure AQ-TOD#1-3.1: Implement Mitigation Measures AQ-TOD#1-4.1a and AQ-TOD#1-4.1b.

Significance With Mitigation: Significant and Unavoidable. Despite implementation of Mitigation Measures AQ-TOD#1-4.1a and AQ-TOD#1-4.1b, construction of the proposed TOD #1 project would still result in an exceedance of the risk thresholds. Therefore, the proposed TOD #1 project's contribution to cumulative air quality impacts during construction activities would be *significant and unavoidable*.

Operation

Regional

As described in AQ-2, Operational Emissions, emission generated from the proposed TOD #1 project, when considered with the emissions generated from the proposed TOD #2 project would exceed BAAQMD's regional operational-phase significance thresholds for VOC and NO_X. Consequently, cumulative regional air quality impacts are also *significant*.

Impact AQ-TOD#1-3.2: Implementation of the proposed TOD #1 project would exceed BAAQMD's regional significance thresholds.

Significance With Mitigation: Significant and Unavoidable. While compliance with the Specific Plan Update Circulation and Parking policies listed in Table 4.2-7, which could potentially reduce VMT and associated emissions impacts in the Specific Plan Area by providing improved pedestrian, bicycle and transit and opportunities for alternative modes of transportation for employees, it cannot be assured that the reductions would sufficiently reduce the impact.

Health Risks

The on-site sensitive receptors could be exposed to substantial pollutant concentrations from nearby off-site stationary sources in addition to mobile-sources along high-volume roadways such as Millbrae Avenue and El Camino Real. Therefore, impacts are considered *significant*.

Impact AQ-TOD#1-3.3: Risks levels for the on-site sensitive receptors could exceed BAAMD's applicable cumulative cancer risk threshold of 100 in a million due to the siting of the project site in proximity to sources of TAC.

Mitigation Measure AQ-TOD#1-3.3: Implement Mitigation Measure AQ-TOD#1-4.2.

Significance With Mitigation: Less than significant.

TOD #2 Project

Construction

Regional

As described in AQ-2, Construction Emissions, Fugitive Dust, the proposed TOD #2 project would not have a significant construction impact related to fugitive dust emissions with compliance with Specific Plan Update Implementation Policy IMP 11. Therefore, the proposed TOD #2 project's contribution to cumulative air quality impacts would also be *less than significant*.

Significance With Mitigation: Less than significant.

Localized

Adjacent sensitive land uses could be potentially impacted by construction activities and cumulative emissions of TACs. Criteria pollutants from multiple construction projects would further degrade regional and local air quality. Construction of the proposed TOD #1 and TOD #2 projects could occur concurrently. As stated, air quality would be temporarily impacted during proposed TOD #1 and TOD #2 project-related construction activities. Therefore, construction-related health risk impacts for the proposed TOD #2 project are considered to be *significant*.

Impact AQ-TOD#2-3.1: Construction of the proposed TOD #2 project would result in exceedance of BAAQMD's risk thresholds.

Mitigation Measure AQ-TOD#2-3.1: Implement Mitigation Measures AQ-TOD#1-4.1a and AQ-TOD#1-4.1b.

Significance With Mitigation: Significant and Unavoidable. Implementation of Mitigation Measures AQ-TOD#1-4.1a and AQ-TOD#1-4.1b would reduce health risk impacts associated with construction of the proposed TOD #2 project. However, concurrent construction of the proposed TOD #2 project with in addition to the proposed TOD #1 project would result in an exceedance of the risk thresholds. Therefore, the proposed TOD #2 project's contribution to cumulative air quality impacts during construction activities would be *significant and unavoidable*.

Operation

Regional

As described in AQ-2, Operational Emissions, emission generated from the proposed TOD #2 project, when considered with the emissions generated from the proposed TOD #1 project would exceed BAAQMD's regional operational-phase significance thresholds for VOC and NO_X. Consequently, cumulative regional air quality impacts are also *significant*.

Impact AQ-TOD#2-3.2: Implementation of the proposed TOD #2 project would exceed BAAQMD's regional significance thresholds.

Significance With Mitigation: Significant and Unavoidable. While compliance with the Specific Plan Update Circulation and Parking policies listed in Table 4.2-7, which could potentially reduce VMT and associated emissions impacts in the Specific Plan Area by providing improved pedestrian, bicycle and transit and opportunities for alternative modes of transportation for employees, it cannot be assured that the reductions would sufficiently reduce the impact.

Health Risks

The on-site sensitive receptors could be exposed to substantial pollutant concentrations from nearby off-site stationary sources in addition to mobile-sources along high-volume roadways such as Millbrae Avenue and El Camino Real. Therefore, impacts are considered *significant*.

Impact AQ-TOD#2-3.3: Risks levels for the on-site sensitive receptors could exceed BAAMD's applicable cumulative cancer risk threshold of 100 in a million due to the siting of the project site in proximity to sources of TAC.

Mitigation Measure AQ-TOD#2-3.3: Implement Mitigation Measure AQ-TOD#1-4.2.

Significance With Mitigation: Less than significant.

AQ-4	The proposed Project could result in the placement of sensitive receptors proximate to major sources of air pollution in addition to exposing off-site sensitive receptors to substantial concentrations of TACs during construction.

Specific Plan Update

CO Hotspots

Areas of vehicle congestion have the potential to create pockets of CO, called hotspots. These pockets have the potential to exceed the State one-hour standard of 20 parts per million (ppm) or the eight-hour standard of 9.0 ppm. Because CO is produced in the greatest quantities from vehicle combustion and does not readily disperse into the atmosphere, adherence to AAQS is typically demonstrated through an analysis of localized CO

concentrations. Hotspots are typically produced at intersections, where traffic congestion is highest because vehicles queue for longer periods and are subject to reduced speeds.

The proposed Specific Plan Update would provide a mix of uses near the Millbrae Station that would draw an array of transit users to live, work, and/or shop without relying on an automobile. The proposed Specific Plan Update also promotes infill development and improves pedestrian and bicycle circulation. The objectives would ensure consistency with C/CAG's CMP. The C/CAG's CMP must be consistent with MTC/ABAG's *Plan Bay Area*. An overarching goal of the regional *Plan Bay Area* is to concentrate development in areas where there are existing services and infrastructure rather than allocate new growth in outlying areas where substantial transportation investments would be necessary to achieve the per capita passenger vehicle VMT and associated GHG emissions reductions.

In addition, the SFBAAB has been designated attainment under both the National and California AAQS for CO. Under existing and future vehicle emission rates, a project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour — or 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited — in order to generate a significant CO impact.[44] The proposed Specific Plan Update would generate approximately 21,062 average daily [vehicle] trips (ADT) and would not exceed the screening criteria of the BAAQMD. Thus, the proposed Specific Plan Update would not have the potential to substantially increase CO hotspots at intersections in the Specific Plan Area and vicinity. Therefore, localized air quality impacts related to mobile-source emissions would therefore be *less than significant*.

Off-Site Community Risk and Hazards During Construction

Development of future individual projects would temporarily elevate concentrations of TACs and $PM_{2.5}$ in the vicinity of off-site sensitive land uses during construction activities. Information specific to individual developments (e.g. site location, land use type and amount, construction phasing and equipment, etc.) would be needed to assess the specific construction-related risks to the nearby sensitive receptors. As the proposed Specific Plan Update is broad-based policy plan, specific information and locations of future individual projects are unknown at this time. However, development of future individual projects could exceed BAAQMD's incremental cancer risk standard of 10 in a million, and/or result in $PM_{2.5}$ concentrations exceeding 0.3 $\mu g/m^3$, and/or exceeding the appropriate non-cancer hazard index of 1.0. Therefore, construction-related health risk impacts associated with the proposed Specific Plan Update is considered *significant*.

Impact AQ-SP-4.1: Construction activities associated with future development projects accommodated under the proposed Specific Plan Update could expose nearby receptors to substantial concentrations of TACs.

> **Mitigation Measure AQ-SP-4.1:** Prior to future discretionary approval, the City of Millbrae Community Development Department shall require an applicant for a new development project where nearby sensitive land uses (e.g. residences, schools, and day care centers) are within 1,000 feet of the future project site, to prepare and submit a construction health risk assessment (HRA) to evaluate the construction health risk impacts of the project to the sensitive receptors. The HRA shall be prepared in accordance with policies and

[44] Bay Area Air Quality Management District (BAAQMD), 2011 (Revised), *CEQA Air Quality Guidelines*.

procedures of the State Office of Environmental Health Hazard Assessment (OEHHA) and the Bay Area Air Quality Management District. The latest OEHHA guidelines shall be used for the analysis, including age sensitivity factors, breathing rates, and body weights appropriate for children age 0 to 16 years. If the HRA shows that the incremental cancer risk exceeds ten in one million (10E-06), $PM_{2.5}$ concentrations exceed 0.3 μg/m3, or the appropriate noncancer hazard index exceeds 1.0, the applicant will be required to identify and demonstrate that mitigation measures are capable of reducing potential cancer and non-cancer risks to an acceptable level (i.e. below ten in one million or a hazard index of 1.0), including appropriate enforcement mechanisms.

Measures to reduce risk may include but are not limited to:

- Use of equipment that meets the United States Environmental Protection Agency (US EPA)-Certified Tier 3 emissions standards for off-road diesel-powered construction equipment greater than 50 horsepower.
- Use of emissions control device that achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine, as defined by CARB regulations.

Mitigation measures identified in the HRA shall be identified as mitigation measures in the environmental document and/or incorporated into the all construction plans (e.g. demolition and grading plans) and verified by the City of Millbrae Community Development Department.

Significance With Mitigation: Significant and Unavoidable. Implementation of Mitigation Measure AQ-SP-4.1 would reduce construction-related health risk impacts to the extent feasible. However, despite implementation of mitigation, construction-related health risk impacts may still exceed the applicable thresholds due to future project specific circumstances.

On-Site Toxic Air Contaminants

The proposed Specific Plan Update would not create new major sources of TACs. Non-residential (e.g. commercial and retail) land uses may generate small quantities of TACs (e.g. dry cleaners and gasoline dispensing facilities). However, these small-quantity generators would require review by BAAQMD for permitted sources of air toxics, which would ensure health risks are below the BAAQMD thresholds.

However, the proposed Specific Plan Update could introduce new sensitive land uses near existing sources of TACs. Regulation of land uses falls outside CARB jurisdiction; however, CARB developed and approved the *2005 Air Quality and Land Use Handbook: A Community Health Perspective* to provide guidance regarding the siting of sensitive land uses in the vicinity of freeways, distribution centers, rail yards, ports, refineries, chrome-plating facilities, dry cleaners, and gasoline-dispensing facilities. This guidance document was developed to assess compatibility and associated health risks when placing sensitive receptors near existing pollution sources.

CARB's recommendations on the siting of new sensitive land uses were based on a compilation of recent studies that evaluated data on the adverse health effects ensuing from proximity to air pollution sources. The key observation in these studies is that proximity to air pollution sources substantially increases both exposure and the

potential for adverse health effects. There are three carcinogenic TACs that constitute the majority of the known health risks from motor vehicle traffic: DPM from trucks, and benzene and 1,3 butadiene from passenger vehicles.

Table 4.2-14 shows a summary of CARB recommendations for siting new sensitive land uses in the vicinity of air-pollutant sources.

TABLE 4.2-14 CARB RECOMMENDATIONS FOR SITING NEW SENSITIVE LAND USES

Source/Category	Advisory Recommendations
Freeways and High-Traffic Roads	Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles per day, or rural roads with 50,000 vehicles per day.
Distribution Centers	Avoid siting new sensitive land uses within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units [TRUs] per day, or where TRU unit operations exceed 300 hours per week). Take into account the configuration of existing distribution centers and avoid locating residences and other sensitive land uses near entry and exit points.
Rail Yards	Avoid siting new sensitive land uses within 1,000 feet of a major service and maintenance rail yard. Within 1 mile of a rail yard, consider possible siting limitations and mitigation approaches.
Ports	Avoid siting of new sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult local air districts or CARB on the status of pending analyses of health risks.
Refineries	Avoid siting new sensitive land uses immediately downwind of petroleum refineries. Consult with local air districts and other local agencies to determine an appropriate separation.
Chrome Platers	Avoid siting new sensitive land uses within 1,000 feet of a chrome plater.
Dry Cleaners Using Perchloroethylene	Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines, provide 500 feet. For operations with three or more machines, consult with the local air district. Do not site new sensitive land uses in the same building with perchloroethylene dry cleaning operations.
Gasoline Dispensing Facilities	Avoid siting new sensitive land uses within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50-foot separation is recommended for typical gas dispensing facilities.

Source: California Air Resources Board (CARB), May 2005, *Air Quality and Land Use Handbook: A Community Health Perspective*.

CARB's recommendations presented in the table are based on data that show that localized air pollution exposures can be reduced by as much as 80 percent by following CARB minimum distance separations:

- Stationary sources within 1,000 feet of the Specific Plan Area were identified using BAAQMD's Stationary Source Screening Analysis Tool. There are approximately 23 potential stationary sources in or near the Plan Area, including twelve emergency diesel generators, four auto body repair and refinishing facilities, four gas stations, two dry cleaners, and one industrial use.
- High-volume roadways with over 10,000 vehicles per day were also mapped based on the traffic projections from the traffic data provided by Fehr and Peers. High volume roadways in the Specific Plan Area that carry 10,000 vehicles per day or more include:

- US 101, Millbrae Avenue, El Camino Real, Trousdale Drive (west of El Camino Real), and Rollins Road (south of Millbrae Avenue).

Figure 4.2-1 identifies stationary sources of TACs mapped by BAAQMD within 1,000 feet of the Specific Plan Area, as well as a 500-foot screening area around high-volume roadways. Because these are screening distances, refined analysis of the effects from many of the high volume roadways would likely show much lower potential TAC exposure and smaller buffer zones. A refined analysis or site-specific health risk assessment should be conducted for all new sensitive sources that are sited within these areas to determine the actual health impact.

Future projects within 1,000 feet of major sources of TACs would need to ensure that they could achieve BAAQMD's performance standards (greater or equal to ten in one million [10E-06] cancer risk, greater or equal to 0.3 μg/m^3 $PM_{2.5,}$ or a non-cancer hazard index greater or equal to 1.0). Consequently, mitigation is needed to ensure that new projects are evaluated in accordance with BAAQMD's CEQA Guidelines. Therefore, impacts are *significant*.

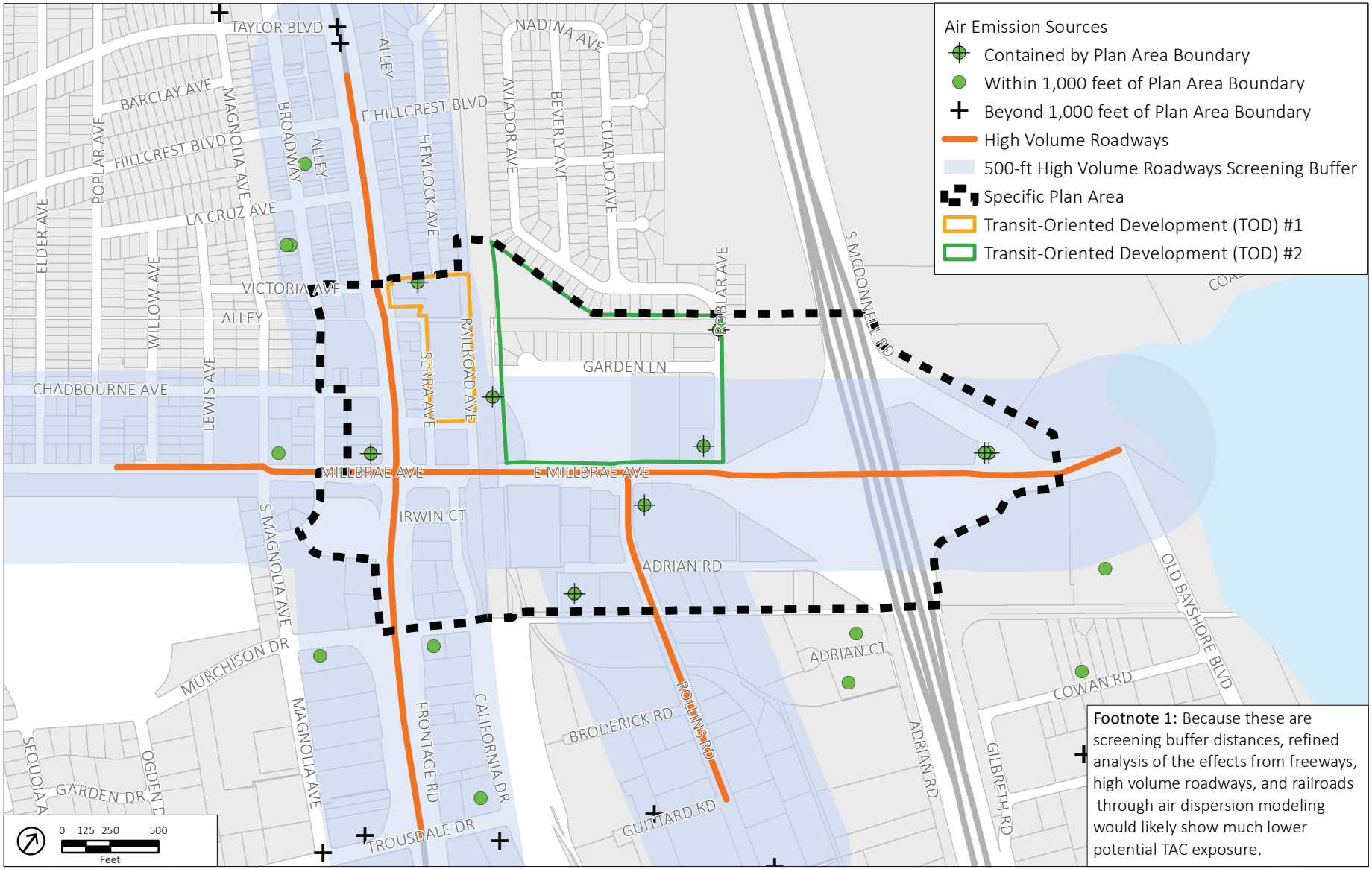
Impact AQ-SP-4.2: Risks to sensitive receptors near sources of TACS could exceed the cancer risk and non-cancer hazard index.

Mitigation Measure AQ-SP-4.2: The City shall require applicants for future residential and other sensitive land use projects (e.g. hospitals, nursing homes, and day care centers) within 1,000 feet of a major sources of TACs (e.g. warehouses, industrial areas, freeways, and roadways with traffic volumes over 10,000 vehicle per day), as measured from the property line of the project to the property line of the source/edge of the nearest travel lane, shall submit a health risk assessment (HRA) to the City prior to future discretionary project approval. The HRA shall be prepared in accordance with policies and procedures of the State Office of Environmental Health Hazard Assessment (OEHHA) and the Bay Area Air Quality Management District. The latest OEHHA guidelines shall be used for the analysis, including age sensitivity factors, breathing rates, and body weights appropriate for children age 0 to 16 years. If the HRA shows that the incremental cancer risk exceeds either ten in one million (10E-06) and/or 100 in a million for cumulative sources, $PM_{2.5}$ concentrations exceed 0.3 μg/m^3, or the appropriate non-cancer hazard index exceeds 1.0, the applicant will be required to identify and demonstrate that mitigation measures are capable of reducing potential cancer and non-cancer risks to an acceptable level (i.e. below ten in one million or a hazard index of 1.0), including appropriate enforcement mechanisms. Measures to reduce risk may include but are not limited to:

- Air intakes located away from high volume roadways and/or truck loading zones.
- Heating, ventilation, and air conditioning systems of the buildings provided with appropriately sized Maximum Efficiency Rating Value (MERV) filters.

Mitigation measures identified in the HRA shall be identified as mitigation measures in the environmental document and/or incorporated into the site development plan as a component of the proposed future project. The air intake design and MERV filter requirements shall be noted and/or reflected on all building plans submitted to the City and shall be verified by the City of Millbrae Community Development Department.

Significance With Mitigation: Less than significant.



Source: Bay Area Air Quality Management District, 2012; ABAG, 2014; PlaceWorks, 2015.

Figure 4.2-1

Sources of Toxic Air Contaminants Proximate to the Specific Plan Area

TOD #1 Project

Off-Site Community Risk and Hazards During Construction

The proposed TOD #1 project would temporarily elevate concentrations of TACs and $PM_{2.5}$ in the vicinity of off-site sensitive land uses during construction activities. The closest sensitive receptors to the proposed TOD #1 project would be the single family residences directly northwest of the plan area along Hemlock Avenue. Consequently, a full HRA of TACs and $PM_{2.5}$ is warranted.

Sources evaluated in the HRA include off-road construction equipment and heavy-duty diesel trucks along the truck route. The US EPA ISCST3 dispersion modeling program was used to estimate excess lifetime cancer risks, chronic non-cancer hazard indexes, and annual average $PM_{2.5}$ concentrations at the nearest sensitive receptors. Results of the analysis are shown in Table 4.2-15.

TABLE 4.2-15 TOD #1 AND COMBINED TOD #1 AND TOD #2 CONSTRUCTION RISK SUMMARY

	Project Level Risk OEHHA 2015			Project Level Risk OEHHA 2003			
Receptor	Cancer Risk (per million)	Chronic Hazards	$PM_{2.5}$ ($\mu g/m^3$)	Cancer Risk - Adult (per million)	Cancer Risk – Child (per million)	Chronic Hazards	$PM_{2.5}$ ($\mu g/m^3$)
TOD #1 Construction Risk Summary							
Off-Site Resident	122	0.26	0.63	9.9	53	0.26	0.63
BAAQMD Project-Level Threshold	10	1.0	0.3	10	10	1.0	0.3
Exceeds Threshold	Yes	No	Yes	No	Yes	No	Yes
Combined TOD #1 and TOD #2 Projects Construction Risk Summary							
Off-Site Resident	128	0.27	0.66	10.5	56.2	0.27	0.66
BAAQMD Project-Level Threshold	10	1.0	0.3	10	10	1.0	0.3
Exceeds Threshold	Yes	No	Yes	Yes	Yes	No	Yes

Source: Lakes AERMOD View, 8.8.1 (2015).
Note: Cancer risk calculated using 2015 OEHHA HRA guidance. Using BAAQMD's 2012 CEQA Guidelines and the 2003 OEHHA HRA guidance to calculate the cancer risk of residents over the same exposure period, the calculated cancer risks for the child scenario is also over the BAAQMD significance threshold of 10 in a million.

The results of the HRA are based on the maximum receptor concentration over a 5-year construction exposure period for off-site receptors, assuming 24 hour outdoor exposure, and averaged over a 70-year lifetime. Using the 2015 OEHHA HRA guidance, the cancer risks for off-site residents, from only construction activities related to

the proposed TOD #1 project, were calculated to be 122 in a million.[45] As air quality impacts are cumulative, risk impacts from construction activities associated with both the proposed TOD #1 and TOD #2 projects were calculated. The cancer risks for off-site residents under this combined scenario were calculated to be 128 in a million. Both the proposed TOD #1 project only and combined proposed TOD #1 and TOD #2 projects scenarios would result in cancer risks that exceed 10 in a million. For non-carcinogenic effects, the hazard index identified for each toxicological endpoint totaled less than one for off-site residents from the proposed TOD #1 project and the combined construction activities from the proposed TOD #1 and TOD #2 projects. Therefore, chronic non-carcinogenic hazards are within acceptable limits. In addition, $PM_{2.5}$ annual concentrations would also exceed the BAAQMD significance thresholds for off-site residents under both the proposed TOD #1 project only and combined proposed TOD #1 and TOD #2 projects scenarios. The results of the HRA using the 2003 OEHHA HRA guidance indicate that, for the proposed TOD #1 project-only scenario, the incremental cancer risk for off-site residents proximate to the site during the construction period is 9.9 per million for the adult-scenario, which would not exceed the cancer risk threshold; and 53 per million for the child scenario, which would exceed the cancer risk threshold. For the combined proposed TOD #1 and TOD #2 projects scenario, the cancer risk for the off-site residents is 10.5 in a million for the adult-scenario and 56.2 in a million for the child scenario, which would exceed the cancer risk threshold.

Utilizing the 2015 OEHHA guidance, the calculated total cancer risk incorporates the individual risk for infant, childhood, and adult exposures into one risk value. Therefore only one cancer risk value was determined using the 2015 OEHHA guidance, unlike BAAQMD's currently adopted methodology which includes a separate adult and child exposure scenario. Additionally, although the risk calculation methodology is changing and results in higher calculated risk, the apparent increase in risk in not caused by increases in actual emissions or exposures to TACs.[46] However, the cancer risk for the proposed TOD #1 project only scenario and the combined proposed TOD #1 and TOD #2 projects scenario, when calculated using the 2015 OEHHA HRA guidance, would exceed BAAQMD's risk threshold. Therefore, cancer risk impacts would be *significant*.

Impact AQ-TOD#1-4.1: Risk impacts to nearby sensitive receptors from construction of the proposed TOD #1 project would exceed the cancer risk threshold of 10 in a million.

> **Mitigation Measure AQ-TOD#1-4.1a:** The Applicant shall require the construction contractor to use equipment that meets the United States Environmental Protection Agency (US EPA)-Certified Tier 3 emissions standards for off-road diesel-powered construction equipment greater than 50 horsepower. Additionally, any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine, as defined by CARB regulations. Prior to construction, the project engineer shall ensure that all demolition and grading plans clearly show the requirement for US EPA Tier 3 or higher emissions standards and Level 3 diesel emissions control for construction equipment over 50 horsepower. During construction, the construction contractor shall maintain a list of all operating equipment in use on the Project site for

[45] Office of Environmental Health Hazard Assessment (OEHHA), 2015. Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments.

[46] San Joaquin Valley Unified Air Pollution Control District, 2015. Final Draft Staff Report: Update to District's Risk Management Policty to Address OEHHA's Revised Risk Assessment Guidance Document. Dated March 18, 2015.

verification by the City of Millbrae Community Development Department or their designee. The construction equipment list shall state the makes, models, and number of construction equipment onsite. Equipment shall properly service and maintain construction equipment in accordance with the manufacturer's recommendations. Construction contractors shall also ensure that all nonessential idling of construction equipment is restricted to five minutes or less in compliance with CARB Rule 2449.

Mitigation Measure AQ-TOD#1-4.1b: Prior to issuance of any building permits, the Applicant shall prepare and submit to the City of Millbrae Community Development Department an additional health risk assessment (HRA) to provide a refined evaluation of health risks impacts to the surrounding sensitive receptors from project-related construction activities. If available, the HRA shall include within the report a detailed list of the construction equipment mix anticipated to be utilized in addition construction phasing and other details of the overall construction processes. The HRA shall be prepared in accordance with the policies and procedures of the State Office of Environmental Health Hazard Assessment (OEHHA) and the Bay Area Air Quality Management District. The latest OEHHA guidelines shall be used for the analysis, including age sensitivity factors, breathing rates, and body weights appropriate for children age 0 to 16 years. If the HRA shows that the incremental cancer risk exceeds ten in one million (10E-06), $PM_{2.5}$ concentrations exceed 0.3 $\mu g/m^3$, or the appropriate noncancer hazard index exceeds 1.0, the applicant will be required to identify and demonstrate that mitigation measures are capable of reducing potential cancer and non-cancer risks to an acceptable level (i.e. below ten in one million or a hazard index of 1.0), including appropriate enforcement mechanisms. Mitigation measures identified in the HRA shall be identified as mitigation measures in the environmental document and/or incorporated into the all construction plans (e.g. demolition and grading plans) and verified by the City of Millbrae Community Development Department.

Significance With Mitigation: Significant and Unavoidable. Mitigation Measures AQ-TOD#1-4.1a would reduce the proposed TOD #1 project's localized construction emissions. The mitigated health risk values were calculated and are summarized in Table 4.2-16. For the proposed TOD #1 project-only scenario, the results indicate that with mitigation, the excess cancer risk determined using the 2015 OEHHA HRA guidance to be 25 in a million for off-site residents and would exceed the threshold value. However, with mitigation the $PM_{2.5}$ annual concentrations would be less than the BAAQMD significance thresholds. Using the 2003 OEHHA HRA guidance, the mitigated cancer risk calculated for the child exposure scenario would also exceed the threshold value. Similarly, for the combined proposed TOD #1 and TOD #2 projects scenario, with mitigation, cancer risk would be reduced to 27 in a million and would still exceed the threshold. However, the $PM_{2.5}$ annual concentrations would be reduced to less than the BAAQMD significant threshold. Figure 4.2-2 shows the contour line for areas where the cancer risk would exceed 10 in a million. Mitigation Measure AQ-TOD#1-4.1b would require an additional future HRA as more information regarding the construction processes required for development of the proposed TOD #1 project becomes available. However, even with implementation of mitigation, the proposed TOD #1 project could expose sensitive receptors to substantial concentrations of air pollutant emissions during construction and impacts would be significant and unavoidable.

TABLE 4.2-16 TOD #1 AND COMBINED TOD #1 AND TOD #2 CONSTRUCTION RISK SUMMARY - MITIGATED

	Project Level Risk OEHHA 2015			Project Level Risk OEHHA 2003			
Receptor	Cancer Risk (per million)	Chronic Hazards	$PM_{2.5}$ ($\mu g/m^3$)	Cancer Risk - Adult (per million)	Cancer Risk – Child (per million)	Chronic Hazards	$PM_{2.5}$ ($\mu g/m^3$)
TOD #1 Construction Risk Summary							
Off-Site Resident	25	0.06	0.26	2.4	13	0.06	0.26
BAAQMD Project-Level Threshold	10	1.0	0.3	10	10	1.0	0.3
Exceeds Threshold	Yes	No	No	No	Yes	No	No
Combined TOD #1 and TOD #2 Construction Risk Summary							
Off-Site Resident	27.0	0.068	0.28	2.6	13.9	0.068	0.28
BAAQMD Project-Level Threshold	10	1.0	0.3	10	10	1.0	0.3
Exceeds Threshold	Yes	No	No	No	Yes	No	No

Mitigation includes Tier 3 Engines and Level 3 Diesel Particulate Filters for equipment 50 HP or greater.
Source: Lakes AERMOD View, 8.8.1 (2015).
Note: Cancer risk calculated using 2015 OEHHA HRA guidance. Using BAAQMD's 2012 CEQA Guidelines and the 2003 OEHHA HRA guidance to calculate the cancer risk of residents over the same exposure period, the calculated cancer risks for the child scenario is also over the BAAQMD significance threshold of 10 in a million.

CO Hotspots

The proposed TOD #1 project would generate approximately 6,888 average daily vehicle trips and would not exceed the screening criteria of the BAAQMD. Additionally, the proposed TOD #1 project would provide a mix of infill development and would be consistent with the overall goals of the MTC/ABAG *Plan Bay Area*. Thus, the proposed TOD #1 project would not have the potential to substantially increase CO hotspots at intersections in the project site area and vicinity. Therefore, localized air quality impacts related to mobile-source emissions would therefore be *less than significant*.

Off-site Community Risks and Hazards from Operation

Operation of the proposed TOD #1 project would not generate substantial quantities of emission from onsite, stationary sources. Land uses that have the potential to generate substantial stationary sources of emissions that would require a permit from BAAQMD include industrial land uses, such as chemical processing, and warehousing operations where substantial truck idling could occur onsite. The proposed TOD #1 project does not fall within these categories of uses. Therefore, localized air quality impacts related to stationary-source emissions would be *less than significant*.

Source: Google Earth Pro, 2015; Lakes AERMOD View 8.8.1.

TOD#1 Boundary
Impacted Area Over Cancer Risk Threshold
MER (Maximum Exposed Receptor)

0 550
Scale (Feet)

Figure 4.2-2
TOD#1 Mitigated Construction Risk

On-Site Toxic Air Contaminants

Development of the proposed multi-family residential units on the project site could expose the residents to substantial pollutant concentrations of TACs from sources that are within 1,000 feet. Potential sources of TACs include permitted stationary facilities and sources, non-permitted sources (e.g. truck idling), and high-volume roadways (i.e. roadways with average daily vehicle volumes of 10,000 or greater). The project site is near adjacent to El Camino Real and within 250 feet of Millbrae Avenue. Both of these roadways average over 10,000 vehicle trips per day and are considered high-volume roadways. Therefore, health risk impacts to the onsite residents are considered *significant*.

Impact AQ-TOD#1-4.2: Due to the proximity of the proposed TOD #1 project site to high-volume roadways and potentially other stationary sources, on-site residents could potentially be exposed to substantial TAC concentration.

Mitigation Measure AQ-TOD#1-4.2: Prior to issuance of any building permits, the proposed TOD #1 project applicant shall prepare and submit to the City of Millbrae Community Development Department a health risk assessment (HRA) to evaluate the health risk impacts of all major sources of TACs within 1,000 feet of the project site. The HRA shall be prepared in in accordance with policies and procedures of the State Office of Environmental Health Hazard Assessment (OEHHA) and the Bay Area Air Quality Management District. The latest OEHHA guidelines shall be used for the analysis, including age sensitivity factors, breathing rates, and body weights appropriate for children age 0 to 16 years. If the HRA shows that the incremental cancer risk exceeds ten in one million (10E-06), $PM_{2.5}$ concentrations exceed 0.3 $\mu g/m^3$, or the appropriate noncancer hazard index exceeds 1.0, the applicant will be required to identify and demonstrate that mitigation measures are capable of reducing potential cancer and non-cancer risks to an acceptable level (i.e. below ten in one million or a hazard index of 1.0), including appropriate enforcement mechanisms. Measures to reduce risk may include but are not limited to**:**

- Air intakes located away from high volume roadways and/or truck loading zones.
- Heating, ventilation, and air conditioning systems of the buildings provided with appropriately sized Maximum Efficiency Rating Value (MERV) filters.

Mitigation measures identified in the HRA shall be identified as mitigation measures in the environmental document and/or incorporated into the site development plan as a component of the proposed TOD #1 project. The air intake design and MERV filter requirements shall be noted and/or reflected on all building plans submitted to the City and shall be verified by the City of Millbrae Community Development Department.

Significance With Mitigation: Less than significant.

TOD #2 Project

Off-Site Community Risk and Hazards During Construction

The proposed TOD #2 project would temporarily elevate concentrations of TACs and $PM_{2.5}$ in the vicinity of off-site sensitive land uses during construction activities. The closest sensitive receptors to the proposed TOD #2 project would be the single family residences directly northwest of the Specific Plan Area along Aviador Avenue. Consequently, a full HRA of TACs and $PM_{2.5}$ is warranted.

Sources evaluated in the HRA include off-road construction equipment and heavy-duty diesel trucks along the truck route. The US EPA ISCST3 dispersion modeling program was used to estimate excess lifetime cancer risks, chronic non-cancer hazard indexes, and annual average $PM_{2.5}$ concentrations at the nearest sensitive receptors. Results of the analysis are shown in Table 4.2-17.

The results of the HRA are based on the maximum receptor concentration over a 5-year construction exposure period for off-site receptors, assuming 24 hour outdoor exposure, and averaged over a 70-year lifetime. Based on the construction activities associated with the proposed TOD #2 project-only, the cancer risks for off-site residents were calculated using the 2015 OEHHA HRA guidance to be 30 in a million.[47] For non-carcinogenic effects, the hazard index identified for each toxicological endpoint totaled less than one for both off-site residents. Therefore, chronic non-carcinogenic hazards are within acceptable limits. In addition, $PM_{2.5}$ annual concentrations would not exceed the BAAQMD significance thresholds for off-site residents. The results of the HRA using the 2003 OEHHA HRA guidance indicate that the incremental cancer risk for off-site residents proximate to the site during the construction period is 2.8 per million for the adult-scenario, which would not exceed the cancer risk threshold; and 15 per million for the child scenario, which would exceed the cancer risk threshold.

TABLE 4.2-17 TOD #2 AND COMBINED TOD #1 AND TOD #2 CONSTRUCTION RISK SUMMARY

	Project Level Risk OEHHA 2015			Project Level Risk OEHHA 2003			
Receptor	Cancer Risk (per million)	Chronic Hazards	$PM_{2.5}$ ($\mu g/m^3$)	Cancer Risk - Adult (per million)	Cancer Risk – Child (per million)	Chronic Hazards	$PM_{2.5}$ ($\mu g/m^3$)
TOD #2 Project Construction Risk Summary							
Off-Site Resident	30	0.072	0.18	2.8	15	0.072	0.18
BAAQMD Project-Level Threshold	10	1.0	0.3	10	10	1.0	0.3
Exceeds Threshold	Yes	No	No	No	Yes	No	No
Combined TOD #1 and TOD #2 Projects Construction Risk Summary							

[47] Office of Environmental Health Hazard Assessment (OEHHA), 2015. Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments.

TABLE 4.2-17 TOD #2 AND COMBINED TOD #1 AND TOD #2 CONSTRUCTION RISK SUMMARY

	Project Level Risk OEHHA 2015			Project Level Risk OEHHA 2003			
Receptor	Cancer Risk (per million)	Chronic Hazards	$PM_{2.5}$ ($\mu g/m^3$)	Cancer Risk - Adult (per million)	Cancer Risk – Child (per million)	Chronic Hazards	$PM_{2.5}$ ($\mu g/m^3$)
TOD #2 Project Construction Risk Summary							
Off-Site Resident	128	0.27	0.66	10.5	56.2	0.27	0.66
BAAQMD Project-Level Threshold	10	1.0	0.3	10	10	1.0	0.3
Exceeds Threshold	Yes	No	Yes	Yes	Yes	No	Yes

Source: Lakes AERMOD View, 8.8.1 (2015).
Note: Cancer risk calculated using 2015 OEHHA HRA guidance. Using BAAQMD's 2012 CEQA Guidelines and the 2003 OEHHA HRA guidance to calculate the cancer risk of residents over the same exposure period, the calculated cancer risks for the child scenario is also over the BAAQMD significance threshold of 10 in a million.

Utilizing the 2015 OEHHA guidance, the calculated total cancer risk incorporates the individual risk for infant, childhood, and adult exposures into one risk value. Therefore only one cancer risk value was determined using the 2015 OEHHA guidance, unlike BAAQMD's currently adopted methodology which includes a separate adult and child exposure scenario. Additionally, it is important to recognize that although the risk calculation methodology is changing and results in higher calculated risk, the apparent increase in risk in not caused by increases in actual emissions or exposures to TACs.[48] However, the cancer risk calculated using the 2015 OEHHA HRA guidance would exceed BAAQMD's risk threshold.

The health risks for the combined proposed TOD #1 and TOD #2 projects scenario would be the same as discussed above in the proposed TOD #1 project discussion. Therefore, cancer risk impacts would be *significant*.

Impact AQ-TOD#2-4.1: Risk impacts to nearby sensitive receptors from construction of the proposed TOD #2 project would exceed the cancer risk threshold of 10 in a million. Additionally, risk impacts from construction of both the proposed TOD #1 and TOD #2 projects concurrently would exceed the cancer risk and $PM_{2.5}$ thresholds.

Mitigation Measure AQ-TOD#2-4.1: Implement Mitigation Measures AQ-TOD #1-4.1a and AQ-TOD #1-4.1b.

Significance With Mitigation: Significant and Unavoidable. Mitigation Measures AQ-TOD #1-4.1a and AQ-TOD #1-4.1b would reduce the proposed TOD #2 project's localized construction emissions. The mitigated health risk values were calculated and are summarized in Table 4.2-18. The results indicate that with mitigation, the excess cancer risk determined using the 2015 OEHHA HRA guidance to be 9.1 in a million for off-site residents and would be less than the threshold value. In addition, the mitigated cancer risks determined

[48] San Joaquin Valley Unified Air Pollution Control District, 2015. Final Draft Staff Report: Update to District's Risk Management Policy to Address OEHHA's Revised Risk Assessment Guidance Document. Dated March 18, 2015.

using the 2003 OEHHA HRA guidance for the adult and child exposure scenarios would also be less than the threshold values. Consequently, construction activities associated only with the proposed TOD #2 project would not expose sensitive receptors to substantial concentrations of air pollutant emissions during construction. However, when considered with the proposed TOD #1 project, the combined construction activities associated with both the proposed TOD #1 and TOD #2 projects would still result in causing an exceedance of the cancer risk threshold at off-site sensitive receptors.

TABLE 4.2-18 TOD #2 AND COMBINED TOD #1 AND TOD #2 CONSTRUCTION RISK SUMMARY - MITIGATED

	Project Level Risk OEHHA 2015			Project Level Risk OEHHA 2003			
Receptor	Cancer Risk (per million)	Chronic Hazards	$PM_{2.5}$ ($\mu g/m^3$)	Cancer Risk - Adult (per million)	Cancer Risk – Child (per million)	Chronic Hazards	$PM_{2.5}$ ($\mu g/m^3$)
TOD #2 Project Construction Risk Summary							
Off-Site Resident	9.1	0.024	0.07	0.9	4.9	0.024	0.07
BAAQMD Project-Level Threshold	10	1.0	0.3	10	10	1.0	0.3
Exceeds Threshold	No	No	No	No	No	No	No
Combined TOD #1 and TOD #2 Projects Construction Risk Summary							
Off-Site Resident	27.0	0.068	0.28	2.6	13.9	0.068	0.28
BAAQMD Project-Level Threshold	10	1.0	0.3	10	10	1.0	0.3
Exceeds Threshold	Yes	No	No	No	Yes	No	No

Mitigation includes Tier 3 Engines and Level 3 Diesel Particulate Filters for equipment 50 HP or greater.
Source: Lakes AERMOD View, 8.8.1 (2015).
Note: Cancer risk calculated using 2015 OEHHA HRA guidance. Using BAAQMD's 2012 CEQA Guidelines and the 2003 OEHHA HRA guidance to calculate the cancer risk of residents over the same exposure period, the calculated cancer risks for the child scenario is also over the BAAQMD significance threshold of 10 in a million.

CO Hotspots

The proposed TOD #2 project would generate approximately 7,813 average daily vehicle trips and would not exceed the screening criteria of the BAAQMD. Additionally, the proposed TOD #1 project would provide a mix of infill development and would be consistent with the overall goals of the MTC/ABAG *Plan Bay Area*. Thus, the proposed TOD #2 project would not have the potential to substantially increase CO hotspots at intersections in the project site area and vicinity. Therefore, localized air quality impacts related to mobile-source emissions would therefore be *less than significant*.

Off-site Community Risks and Hazards from Operation

Operation of the proposed TOD #2 project would not generate substantial quantities of emission from onsite, stationary sources. Land uses that have the potential to generate substantial stationary sources of emissions that would require a permit from BAAQMD include industrial land uses, such as chemical processing, and warehousing

operations where substantial truck idling could occur onsite. The proposed TOD #2 project does not fall within these categories of uses. Therefore, localized air quality impacts related to stationary-source emissions would be *less than significant*.

On-Site Toxic Air Contaminants

Development of the proposed multi-family residential units on the proposed TOD #2 project site could expose the residents to substantial pollutant concentrations of TACs from sources that are within 1,000 feet. Potential sources of TACs include permitted stationary facilities and sources, non-permitted sources (e.g. truck idling), and high-volume roadways (i.e. roadways with average daily vehicle volumes of 10,000 or greater). The proposed TOD #2 project site is near adjacent to El Camino Real and within 250 feet of Millbrae Avenue. Both of these roadways average over 10,000 vehicle trips per day and are considered high-volume roadways. Therefore, health risk impacts to the onsite residents are considered *significant*.

Impact AQ-TOD#2-4.2: Due to the proximity of the proposed TOD #2 project site to high-volume roadways and potentially other stationary sources, on-site residents could potentially be exposed to substantial TAC concentration.

Mitigation Measure AQ-TOD#2-4.2: Implement Mitigation Measure AQ-TOD#1-4.2

Significance With Mitigation: Less than significant.

AQ-5	The proposed Project would not create objectionable odors affecting a substantial number of people.

Sources of objectionable odors may occur within the city. BAAQMD's Regulation 7, Odorous Substances, places general limitations on odorous substances and specific emission limitations on certain odorous compounds. In addition, odors are regulated under BAAQMD Regulation 1, Rule 1-301, Public Nuisance, which states that "no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public; or which endangers the comfort, repose, health or safety of any such persons or the public, or which causes, or has a natural tendency to cause, injury or damage to business or property." Under BAAQMD's Rule 1-301, a facility that receives three or more violation notices within a 30-day period can be declared a public nuisance.

There are two types of odor impacts: 1) siting sensitive receptors near nuisance odors, and 2) siting new sources of nuisance odors near sensitive receptors. Table 4.2-19 identifies screening distances from potential sources of objectionable odors in the SFBAAB. Odors from these types of land uses are regulated under BAAQMD Regulation 7, Odorous Substances.[49]

[49] While restaurants can generate odors, these sources are not identified by BAAQMD as nuisance odors since they typically do not generate significant odors that affect a substantial number of people. Larger restaurants that employ five or more people are subject to BAAQMD Regulation 7, Odorous Substances.

TABLE 4.2-19 BAAQMD ODOR SCREENING DISTANCES

Land Use/Type of Operation	Screening Distance
Wastewater Treatment Plan	2 miles
Wastewater Pumping Facilities	1 mile
Sanitary Landfill	2 miles
Transfer Station	1 mile
Composting Facility	1 mile
Petroleum Refinery	2 miles
Asphalt Batch Plan	2 miles
Chemical Manufacturing	2 miles
Fiberglass Manufacturing	1 mile
Painting/Coating Operations	1 mile
Rendering Plant	2 miles
Coffee Roaster	1 mile
Food Processing Facility	1 mile
Confined Animal Facility/Feed Lot/ Dairy	1 mile
Green Waste and Recycling Operations	1 mile
Metal Smelting Plants	2 miles

Source: Bay Area Air Quality Management District (BAAQMD), 2011, *California Environmental Quality Act Air Quality Guidelines*, Table 3-3, Odor Screening Distances, and associated Appendix D of these Guidelines.

AQ-5	The proposed Project would not create objectionable odors affecting a substantial number of people.

Specific Plan Update

Siting Receptors in Proximity to Odor Sources

Land uses in and near the Specific Plan Area do not include the types of facilities that generate substantial odors. Furthermore, BAAQMD Regulation 7, Odorous Substances, requires abatement of any nuisance generated by an

odor complaint. Therefore, because existing sources of odors are required to comply with BAAQMD Regulation 7, impacts to siting of new sensitive land uses would be *less then significant*.

Siting New Odor Sources

Implementation of the proposed Specific Plan Update would not involve land uses that generate substantial odors such as from composting, greenwaste, and recycling operations; food processing; chemical manufacturing; and painting/coating operations. Minor odors may be generated from restaurants within the Specific Plan Area; however, these uses do not typically generate substantial odors. BAAQMD requires operators of commercial charbroiler cooking operations to adhere to BAAQMD Regulation 6, Rule 2, Commercial Cooking Equipment. These types of facilities are required to install a catalytic oxidizer to reduce emissions. Furthermore, BAAQMD Regulation 7, Odorous Substances, requires abatement of any nuisance generating an odor complaint. Consequently, compliance with BAAQMD Regulation 7 would ensure that odor impacts are minimized and are *less than significant*.

Significance Without Mitigation: Less than significant.

TOD #1 Project

The proposed TOD #1 project would involve construction of 500 multi-family dwelling units, 32,000 and 267,000 building square feet of retail and office space, respectively. Construction and operation of this type of development would not generate substantial odors or be subject to odors that would affect a substantial number of people. The type of facilities that are considered to have objectionable odors from their operation include wastewater treatments plants, compost facilities, landfills, solid waste transfer stations, fiberglass manufacturing facilities, paint/coating operations (e.g. auto body shops), dairy farms, petroleum refineries, asphalt batch plants, chemical manufacturing, and food manufacturing facilities. The land uses proposed under the proposed TOD #1 project are not associated with foul odors that constitute a public nuisance.

During operation, proposed TOD #1 project could generate odors from cooking. Odors from cooking are not substantial enough to be considered nuisance odors that would affect a substantial number of people. Furthermore, nuisance odors are regulated under BAAQMD Regulation 7, Odorous Substances, which requires abatement of any nuisance generating an odor complaint. BAAQMD's Regulation 7, Odorous Substances, places general limitations on odorous substances and specific emission limitations on certain odorous compounds.[50] In addition, odors are also regulated under BAAQMD Regulation 1, Rule 1-301, Public Nuisance, which states that "no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public; or which endangers the comfort, repose, health or safety of any such persons or the public, or which causes, or has a natural tendency to cause, injury or damage to business or property."

[50] It should be noted that while restaurants can generate odors, these sources are not identified by BAAQMD as nuisance odors since they typically do not generate significant odors that affect a substantial number of people. Larger restaurants that employ five or more people are subject to BAAQMD Regulation 7, Odorous Substances.

During construction activities, construction equipment exhaust, application of asphalt and architectural coatings would temporarily generate odors. Any construction-related odor emissions would be temporary and intermittent in nature. Additionally, noxious odors would be confined to the immediate vicinity of the construction equipment. By the time such emissions reach any sensitive receptor sites, they would be diluted to well below any level of air quality concern.

Therefore, odor impacts related to the proposed TOD #1 project would be *less than significant*.

Significance Without Mitigation: Less than significant.

TOD #2 Project

The proposed TOD #2 project would involve construction of 321 multifamily dwelling units, a hotel with up to 116 guest rooms, 46,935 building square feet of retail, and 164,535 building square feet of office space. The discussion under TOD #1 above applies to the proposed TOD #2 project. Accordingly, odor impacts related to the proposed TOD #2 project would be *less than significant*.

Significance Without Mitigation: Less than significant.

4.2.5 CUMULATIVE IMPACTS

AQ-6	The proposed Project, in combination with past, present, and reasonably foreseeable projects, would cumulatively contribute to air quality impacts in the SFBAAB.

As described under AQ-3, regional air quality impacts were identified as significant for the proposed Specific Plan Update and the proposed TOD #1 and TOD #2 projects; therefore, in combination with past, present, and reasonably foreseeable projects, the proposed Specific Plan Update would result in a significant cumulative impact with respect to air quality, even with implementation of applicable regulations as well as Mitigation Measures described above. Therefore, the impact would be *significant*.

Significance With Mitigation: Significant and Unavoidable.