4.4 AIR QUALITY

This chapter describes the existing air quality setting and examines the air quality impacts associated with the proposed Project. This chapter is based on the methodology recommended by the Bay Area Air Quality Management District (BAAQMD) for project-level review. The analysis contained herein focuses on air pollution from regional emissions and localized pollutant concentrations. "Emission" refers to the actual quantity of pollutant, measured in pounds per day. "Concentration" refers to the amount of pollutant material per volumetric unit of air. Concentrations are measured in parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$). The transportation sector analysis is based on average daily vehicle trips and vehicle miles traveled (VMT) provided by Fehr & Peers. Criteria air pollutant emissions are modeled using the California Emissions Estimator Model (CalEEMod), Version 2013.2.2. Criteria air pollutant emissions modeling for construction and operational phases of the Project is included in Appendix C of this Draft EIR. The Health Risk Assessment (HRA) for construction and operation activities is included in Appendix I.

Environmental Setting

4.4.1.1 REGULATORY FRAMEWORK

Ambient air quality standards (AAQS) have been adopted at State and federal levels for criteria air pollutants. In addition, both the State and federal government regulate the release of toxic air contaminants (TACs). The City of Walnut Creek is in the San Francisco Bay Area Air Basin (SFBAAB) and is subject to the rules and regulations imposed by the BAAQMD, as well as the California AAQS adopted by the California Air Resources Board (CARB) and national AAQS adopted by the United States Environmental Protection Agency (USEPA). Federal, State, regional, and local laws, regulations, plans, or guidelines that are potentially applicable to the proposed Project are summarized below.

Federal and State Laws

Ambient Air Quality Standards

The Clean Air Act (CAA) was passed in 1963 by the U.S. 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 based on even greater health and welfare concerns.

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 4.4-1. 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. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.

TABLE 4.4-1 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 ppm	35 ppm	Internal combustion engines, primarily gasoline-powered motor vehicles.
	8 hours	9.0 ppm	9 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	
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 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 µg/m^3	150 µg/m^3	
Respirable Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	12 µg/m^3	12 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 µg/m^3	

TABLE 4.4-1 AMBIENT AIR QUALITY STANDARDS FOR CRITERIA POLLUTANTS

Pollutant	Averaging Time	California Standard	Federal Primary Standard	Major Pollutant Sources
Lead (Pb)	30-Day Average	1.5 µg/m^3	*	Present source: lead smelters, battery manufacturing and 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 =0.23/km visibility of 10≥ miles	*	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	*	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	*	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, 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 primary standards were revoked.
Source: California Air Resources Board (CARB), 2013. Ambient Air Quality Standards, http://www.arb.ca.gov/research/aaqs/aaqs2.pdf.

Air Pollutants of Concern

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. CO, reactive organic gases (ROG), nitrogen oxides (NO_x), SO_2, PM_{10}, $PM_{2.5}$, and lead are primary air pollutants. Of these, CO, SO_2, NO_2, PM_{10}, and $PM_{2.5}$ are "criteria air pollutants," which means that AAQS have been established for them. ROG and NO_2 are criteria pollutant precursors that form secondary criteria air

pollutants through chemical and photochemical reactions in the atmosphere. O_3 and 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. 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.[1] The SFBAAB is designated under the California and National AAQS as being in attainment of CO criteria levels.[2]
- **Reactive Organic Gases** (ROGs) are compounds composed primarily of hydrogen and carbon atoms. Internal combustion associated with motor vehicle usage is the major source of ROGs. Other sources of ROGs 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 ROGs, but rather by reactions of ROGs to form secondary pollutants such as O_3. There are no AAQS established for ROGs. However, because they contribute to the formation of O_3, the 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 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 NO_x. NO_2 acts as an acute irritant and in equal concentrations is more injurious than NO. At atmospheric concentrations, however, NO_2 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

[1] Bay Area Air Quality Management District, 2011, California Environmental Quality Act Air Quality Guidelines, Appendix C: Sample Air Quality Setting.

[2] California Air Resources Board, Area Designations: Activities and Maps, http://www.arb.ca.gov/desig/adm/adm.htm, accessed on December 13, 2013.

pressure. The SFBAAB is designated an attainment area for NO_2 under the National AAQS and California AAQS.[3]

- **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 tissue.[4] The SFBAAB is designated an attainment area for SO_2 under the California and National AAQS.[5]

- **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. 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.[6]

  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.[7] Diesel particulate matter (DPM) is classified a carcinogen by CARB. The SFBAAB is designated nonattainment under the

[3] California Air Resources Board, Area Designations: Activities and Maps, http://www.arb.ca.gov/desig/adm/adm.htm, accessed on December 13, 2013.

[4] Bay Area Air Quality Management District, 2011, California Environmental Quality Act Air Quality Guidelines, Appendix C: Sample Air Quality Setting.

[5] California Air Resources Board, Area Designations: Activities and Maps, http://www.arb.ca.gov/desig/adm/adm.htm, accessed on December 13, 2013.

[6] Bay Area Air Quality Management District, 2011, California Environmental Quality Act Air Quality Guidelines, Appendix C: Sample Air Quality Setting.

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

California AAQS for PM_{10} and a nonattainment area under both the California and National AAQS for $PM_{2.5}$.[8]

- **Ozone** (O_3) is commonly referred to as "smog" and is a gas that is formed when ROGs 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.[9] The SFBAAB is designated a nonattainment area of the 1-hour California AAQS and 8-hour California and National AAQS for O_3.[10]

- **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 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 EPA banned the use of leaded gasoline in highway vehicles in December 1995. As a result of the 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.[11] The SFBAAB is designated in attainment of the California and National AAQS for lead.[12] 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

[8] California Air Resources Board, Area Designations: Activities and Maps, http://www.arb.ca.gov/desig/adm/adm.htm, accessed on December 13, 2013.

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

[10] California Air Resources Board, Area Designations: Activities and Maps, http://www.arb.ca.gov/desig/adm/adm.htm, accessed on December 13, 2013.

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

[12] California Air Resources Board, Area Designations: Activities and Maps, http://www.arb.ca.gov/desig/adm/adm.htm, accessed on December 13, 2013.

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 Clean Air Act (42 U.S. Code Section 7412[b]) is a toxic air contaminant. Under State law, the California EPA (Cal/EPA), 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 health risk assessment (HRA) and, if specific thresholds are exceeded, are required to communicate the results to the public through notices and public meetings.

By the last update to the TAC list in December 1999, CARB had designated 244 compounds as TACs.[13] 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 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.

The BAAQMD's Community Air Risk Evaluation program was initiated in 2004 to evaluate and reduce health risks associated with exposures to outdoor TACs in the Bay Area. Based on the annual emissions inventory of TACs for the SFBAAB, DPM was found to account for approximately 80 percent of the cancer risk from airborne toxics. The highest DPM concentrations occur in the urban core areas of eastern San Francisco, western Alameda, and northwestern Santa Clara counties. BAAQMD has identified six impacted communities in the Bay Area: Concord, eastern San Francisco, western Alameda County, Redwood City/East Palo Alto, Richmond/San Pablo, and San Jose. The City of Walnut Creek is not one of these six impacted communities. The major contributor to acute and chronic non-cancer health effects in the SFBAAB is acrolein (C_3H_4O). Major sources of acrolein include on-road mobile sources and aircraft near freeways and commercial and military airports.[14] Currently CARB does not have

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

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

certified emission factors or an analytical test method for acrolein. Since the appropriate tools needed to implement and enforce acrolein emission limits are not available, the BAAQMD does not conduct health risk screening analysis for acrolein emissions.[15]

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 the BAAQMD was created in 1955.[16] The BAAQMD prepares air quality management plans (AQMPs) to attain ambient air quality standards in the SFBAAB. The BAAQMD prepares ozone attainment plans (OAPs) for the National O_3 standard and clean air plans for the California O_3 standard. The BAAQMD prepares these AQMPs in coordination with Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC). The most recent adopted comprehensive plan is the 2010 Bay Area Clean Air Plan, which was adopted 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 CAA to implement all feasible measures to reduce O_3; 2) consider the impacts of O_3 control measures on PM, TACs, and 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 2012 timeframe. The 2010 Bay Area Clean Air Plan also provides the framework for the SFBAAB to achieve attainment of the California AAQS. Areas that meet AAQS are classified attainment areas, while 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 4.4-2. The SFBAAB is

[15] Bay Area Air Quality Management District, 2010, Air Toxics NSR Program, Health Risk Screening Analysis Guidelines.

[16] Bay Area Air Quality Management District, 2011, California Environmental Quality Act Air Quality Guidelines, Appendix C: Sample Air Quality Setting.

currently designated a nonattainment area for California and National O_3, California and National $PM_{2.5}$, and California PM_{10} AAQS.

TABLE 4.4-2 ATTAINMENT STATUS OF CRITERIA POLLUTANTS IN THE SAN FRANCISCO AIR BASIN

Pollutant	State	Federal
Ozone (O_3) – 1-hour	Nonattainment (serious)	Nonattainment
Ozone (O_3) – 8-hour	Nonattainment	Classification revoked (2005)
Respirable Particulate Matter (PM_{10})	Nonattainment	Unclassified
Respirable Particulate Matter ($PM_{2.5}$)	Nonattainment	Nonattainment
Carbon Monoxide (CO)	Attainment	Attainment
Nitrogen Dioxide (NO_2)	Attainment	Attainment
Sulfur Dioxide (SO_2)	Attainment	Attainment
Lead (Pb)	Attainment	Attainment
Sulfates (SO_4)	Attainment	Unclassified
All others	Unclassified	Unclassified

Source: California Air Resources Board, 2013, Area Designations: Activities and Maps, http://www.arb.ca.gov/desig/adm/adm.htm, accessed on December 13, 2013.

Contra Costa Transportation Authority

The Contra Costa Transportation Authority (CCTA) is the designated congestion management agency for the county. The CCTA's congestion management plan (CMP) identifies strategies to respond to future transportation needs, identifies procedures to alleviate and control congestion, and promotes countywide solutions. Pursuant to the 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).[17] The Metropolitan Transportation Commission (MTC) cannot approve any transportation plan, program, or project unless these activities conform to the State Implementation Plan (SIP).

The federal CAA requires that federal transportation plans be prepared for regions in nonattainment of the federal AAQS. CCTA provides county-level input to MTC during preparation of the regional transportation plan (RTP). The current RTP, Plan Bay Area, was adopted on July 18, 2013. Plan Bay Area was prepared by MTC and the

[17] Contra Costa Transportation Authority (CCTA). 2011, Contra Costa County Congestion Management Program, http://www.ccta.net/assets/documents/CMP/2011%20CMP%20FULL%20DOCUMENT.pdf. November 16.

Association of Bay Area Governments (ABAG). Plan Bay Area incorporates the region's sustainable communities strategy (SCS) pursuant to Senate Bill 375 (SB 375).[18]

4.4.1.2 EXISTING CONDITIONS

This section describes existing conditions related to air quality in the Project Area.

San Francisco Air Basin

The 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.[19]

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 splits, resulting in a western coast gap, Golden Gate, and an eastern coast gap, Carquinez Strait, which allow air to flow in and out of the SFBAAB and the Central Valley.

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, the northwesterly winds accelerate considerably and come more directly from the west as they stream through the Golden Gate. This

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

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

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 at 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. 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 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 (ºF) cooler than temperatures 15 to 20 miles inland. At night this contrast usually decreases to less than 10ºF.

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

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 are usually high, and thus pollution levels tend to be low. However, frequent dry periods do occur during the winter where mixing and ventilation are low and pollutant levels build up.

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 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

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 are more common in the summer and fall, and radiation inversions are more common during the winter. The highest air pollutant concentrations in the SFBAAB generally occur during inversions.

Existing Ambient Air Quality

Existing levels of ambient air quality and historical trends and projections in the vicinity of the Project site are best documented by measurements made by the BAAQMD. The air quality monitoring station closest to the city is the Concord Monitoring Station. Data from this station is summarized in Table 4.4-3. The data show occasional violations of the State and federal O_3 standards, state PM_{10} standard, and federal $PM_{2.5}$ standard. The State and federal CO and NO_2 standards have not been exceeded in the last five years in the vicinity of this monitoring station.

Existing Criteria Air Pollutant Emissions

The existing Project site is developed with 4 single-family residences and 17 multi-family dwelling units. The existing residential uses generate criteria air pollutants from vehicle trips, use of natural gas used for heating and cooling, and other area sources on-site (e.g., refrigerants, aerosols, etc.). According to the traffic study prepared by Fehr & Peers, the existing residences generate 213 daily vehicle trips (640 VMT). The existing operational emissions are summarized in Table 4.4-4.

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.

TABLE 4.4-3 AMBIENT AIR QUALITY MONITORING SUMMARY

Pollutant/Standard	Number of Days Threshold Were Exceeded and Maximum Levels During Such Violations				
	2008	2009	2010	2011	2012
Ozone (O_3)[a]					
State 1-Hour ≥ 0.09 ppm	3	2	2	2	0
State 8-hour ≥ 0.07 ppm	8	5	4	5	3
Federal 8-Hour > 0.075 ppm	6	2	1	2	2
Maximum 1-Hour Conc. (ppm)	0.119	0.106	0.103	0.099	0.093
Maximum 8-Hour Conc. (ppm)	0.089	0.088	0.087	0.079	0.086
Carbon Monoxide (CO)[a]					
State 8-Hour > 9.0 ppm	0	0	0	0	0
Federal 8-Hour ≥ 9.0 ppm	0	0	0	0	0
Maximum 8-Hour Conc. (ppm)	1.13	1.09	0.95	1.24	0.082
Nitrogen Dioxide (NO_2)[a]					
State 1-Hour ≥ 0.18 (ppm	0	0	0	0	0
Maximum 1-Hour Conc. (ppb)	50.0	40.0	42.0	42.4	39.6
Coarse Particulates (PM_{10})[a]					
State 24-Hour > 50 µg/m^3	1	0	0	1	0
Federal 24-Hour > 150 µg/m^3	0	0	0	0	0
Maximum 24-Hour Conc. (µg/m^3)	50.5	32.5	41.3	58.8	35.4
Fine Particulates ($PM_{2.5}$)[a]					
Federal 24-Hour > 35 µg/m^3	3	1	1	2	0
Maximum 24-Hour Conc. (µg/m^3)	60.3	39.0	36.4	47.5	32.2

Notes: ppm: parts per million; ppb: parts per billion; µg/m^3: or micrograms per cubic meter
a. Data obtained from the Concord 2975 Treat Boulevard Monitoring Station.
Source: California Air Resources Board, 2013, Air Pollution Data Monitoring Cards (2008, 2009, 2010, 2011, and 2012), http://www.arb.ca.gov/adam/index.html, accessed on December 17, 2013.

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 public.

The closest sensitive receptors proximate to the Project site include residential areas to the south, across Lacassie Avenue and to the east between commercial developments on the north side of Lacassie Avenue.

TABLE 4.4-4 EXISTING CRITERIA AIR POLLUTANT EMISSIONS INVENTORY

Pollutant	Reactive Organic Gases (ROG) (Tons/Year)	Nitrogen Oxides (NO_x) (Tons/Year)	Respirable Particulate Matter (PM_{10}) (Tons/Year)	Respirable Particulate Matter ($PM_{2.5}$) (Tons/Year)
Area Sources	0.12	<0.01	<0.01	<0.01
Energy Use	<0.01	0.02	<0.01	<0.01
Mobile Sources	0.09	0.05	0.09	0.02
Total	0.21	0.07	0.09	0.03
Average Daily Emissions (lbs/day)	*1.13*	*0.38*	*0.48*	*0.14*

Source: CalEEMod 2013.2.2. Average daily emissions based on annual emissions divided by 365 days per year. Assumes existing residents do not have wood-burning or gas fireplaces.

4.4.2 STANDARDS OF SIGNIFICANCE

4.4.2.1 CEQA THRESHOLDS

An Initial Study was prepared for the proposed Project (see Appendix A of this Draft EIR). Based on the analysis contained in the Initial Study it was determined that development of the proposed Project would not result in significant environmental impacts per the following significance standard and therefore, it is not discussed in this chapter:

- Create objectionable odors affecting a substantial number of people.

Based on the Initial Study it was determined that the proposed Project would have a significant effect on the environment with respect to air quality 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 Project region is in 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.

4.4.2.2 BAAQMD THRESHOLDS

The BAAQMD adopted CEQA Guidelines in June 2010, which were revised in May 2011.[20] The BAAQMD CEQA Guidelines include methodology and thresholds for criteria air pollutant impacts and community health risk for plan-level and project-level analyses. The proposed Project qualifies as a project-level project under BAAQMD's criteria. The BAAQMD's Guidelines include project-level significance criteria that would be applicable to the proposed Project. For project-level analyses, BAAQMD has adopted screening criteria and significance criteria that would be applicable to the proposed Project. If a project exceeds the screening level, it would be required to conduct a full analysis using the BAAQMD's significance criteria:

Criteria Air Pollutants

Regional Significance Criteria

The BAAQMD's criteria for regional significance for projects that exceed the screening thresholds are shown in Table 4.4-5. Criteria for both the construction and operational phases of the Project are shown.

TABLE 4.4-5 BAAQMD SIGNIFICANCE THRESHOLDS

Pollutant	Construction Phase Average Daily Emissions (Pounds/Day)	Operational Phase Average Daily Emissions (Pounds/Day)	Maximum Annual Emissions (Tons/Year)
Reactive Organic Gases (ROG)	54	54	10
Nitrogen Oxides (NO_x)	54	54	10
Respirable Particulate Matter (PM_{10})	82 (Exhaust)	82	15
Respirable Particulate Matter ($PM_{2.5}$)	54 (Exhaust)	54	10
PM_{10} and $PM_{2.5}$ Fugitive Dust	Best Management Practices	None	None

Source: BAAQMD, 2011, California Environmental Quality Act Air Quality Guidelines, Appendix D: Threshold of Significance Justification.

[20] BAAQMD's CEQA Guidelines were reposted without the screening and significance thresholds tables in 2012 after the March 5, 2012, trial court ruling in *California Building Industry Association v. Bay Area Air Quality Management District* (Superior Court Case No. RG10548693). However, on August 13, 2013, the Court of Appeals reversed the trial court ruling and found that promulgation of thresholds of significance by a public agency is not a "project" subject to CEQA review. However, the California Supreme Court recently granted limited review of the case, so BAAQMD has not reinstated its previously adopted thresholds. Although, BAAQMD is still not recommending its original thresholds, the thresholds are supported by appropriate studies and analysis (see http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx). Accordingly, pursuant to its discretion under State CEQA Guidelines section 15064 (b) ("lead agencies may exercise their discretion on what criteria to use") and the recent holding in *Citizens for Responsible Equitable Environmental Development v. City of Chula Vista* (2011) 197 Cal.App.4th 327, 335-336 ("The determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data."), the City has decided to apply the BAAQMD CEQA thresholds to the Project.

Local CO Hotspots

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

- The Project is consistent with an applicable congestion management program established by the County Congestion Management Agency for designated roads or highways, the RTP, 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 intersections 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).[21]

Odors

The BAAQMD's thresholds for odors are qualitative. The BAAQMD does not consider odors generated from use of construction equipment and activities to be objectionable. For operational phase odor impacts, a project that would result in the siting of a new source of odor or exposure of a new receptor to existing or planned odor sources should consider odor impacts. The BAAQMD considers potential odor impacts to be significant if there are five confirmed complaints per year from a facility, averaged over three years. The 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.[22]

Community Risk and Hazards

The BAAQMD's significance thresholds for local community risk and hazard impacts apply to both the siting of a new source and to 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 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.[23] The City of Walnut Creek and Contra Costa County do not have a qualified risk reduction plan.

[21] Bay Area Air Quality Management District, 2011 (Revised), California Environmental Quality Act Air Quality Guidelines.
[22] Bay Area Air Quality Management District, 2011 (Revised), California Environmental Quality Act Air Quality Guidelines.
[23] Bay Area Air Quality Management District, 2011 (Revised), California Environmental Quality Act Air Quality Guidelines.

The proposed Project involves residential uses and is therefore not a major source of operational TACs and stationary $PM_{2.5}$. However, the Project is a sensitive land use that would warrant an on-site community risk and hazards evaluation. In addition, 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 thresholds for construction-related local community risk and hazard impacts are the same as for Project operations. The BAAQMD has adopted screening tables for air toxics evaluation during construction.[24] Construction-related TAC and PM 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.[25] Therefore, the thresholds identified below are applied to the Project's construction emissions.

Community Risk and Hazards

Project

Project-level emissions of TACs or $PM_{2.5}$ from individual sources within 1,000 feet of the Project 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 ($\mu g/m^3$) annual average $PM_{2.5}$ from a single source would be a significant cumulatively considerable contribution.[26]

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 cumulatively 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
- An excess cancer risk level 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 $\mu g/m^3$ annual average $PM_{2.5}$.[27]

[24] Bay Area Air Quality Management District, 2010, Screening Tables for Air Toxics Evaluations during Construction.
[25] Bay Area Air Quality Management District, 2011 (Revised), California Environmental Quality Act Air Quality Guidelines.
[26] Bay Area Air Quality Management District, 2011 (Revised), California Environmental Quality Act Air Quality Guidelines.
[27] Bay Area Air Quality Management District, 2011 (Revised), California Environmental Quality Act Air Quality Guidelines.

4.4.3 IMPACT DISCUSSION

4.4.3.1 METHODOLOGY

Criteria air pollutants emissions from construction and operation of the Project were calculated using CalEEMod, Version 2013.2.2. Construction emissions are based on the construction schedule, demolition volumes, haul volumes, and a preliminary list of construction equipment provided by the applicant. Transportation emissions are based on trip generation and VMT provided by Fehr & Peers. A Health Risk Assessment (HRA) for operation and construction activities was conducted for the project using ISCST3.

This section discusses the Project-specific and cumulative impacts related to air quality.

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

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 CAP. The Project 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, the proposed Project would not exceed the level of population or housing foreseen in City or regional planning efforts (see Chapter 4.12, Population and Housing, of this Draft EIR) and, therefore, would not have the potential to substantially affect housing, employment, and population projections within the region, which is the basis of the CAP projections. Furthermore, the net increase in regional emissions generated by the proposed Project would be less than the BAAQMD's emissions thresholds (see Table 4.4-6 and 4.4-7). These thresholds are established to identify projects that have the potential to generate a substantial amount of criteria air pollutants. Because the proposed Project would not exceed these thresholds, the proposed Project would not be considered by the BAAQMD to be a substantial emitter of criteria air pollutants. Further, the Project promotes several of the transportation and land use control measures identified in the CAP that promote mixed-use, compact development that reduces motor vehicle travel. Therefore, the Project would not conflict with or obstruct implementation of the 2010 CAP and impacts would be considered *less than significant*.

Significance Without Mitigation: Less than significant.

AIR-2a	During construction, the Project could violate an air quality standard or contribute substantially to an existing or projected air quality violation.

BAAQMD has identified thresholds of significance for criteria pollutant emissions and criteria air pollutant precursors, including ROG, NO_x, 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.

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 BAAQMD's screening thresholds are not applicable for projects that have overlap of construction phases (e.g., demolition, grading, paving and building construction would occur simultaneously), construction of mixed-use projects, projects that require extensive site preparation, or sites that require extensive material transport (i.e., greater than 10,000 cubic yards of import/export). The proposed Project would necessitate substantial demolition volumes. Therefore, a quantified analysis of the Project's construction emissions was conducted using CalEEMod.

Fugitive Dust

As identified above, the proposed Project would warrant substantial building demolition and would result in the export of soil to accommodate partially below grade parking garage/podium. 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 Project implements the BAAQMD's Best Management Practices (BMPs) for fugitive dust control during construction. The 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. Consequently, construction-related criteria pollutant emissions are potentially significant.

Construction Exhaust Emissions

Construction activities are anticipated to commence in March 2015 and be completed in approximately 22 months. Construction emissions have been calculated based on the preliminary construction schedule and equipment list provided by the Applicant and are based on the number of days each piece of equipment would be mobilized onsite. To determine potential construction-related air quality impacts, criteria air pollutants generated by Project-related construction activities are compared to the BAAQMD significance thresholds in Table 4.4-6 for average daily emissions. Average daily emissions are based on the annual construction emissions divided by the total number of active construction days (see Appendix C). As shown in Table 4.4-6, criteria air pollutant emissions from construction equipment exhaust would not exceed the BAAQMD average daily thresholds. Consequently, construction-related criteria pollutant emissions are less than significant.

TABLE 4.4-6 CONSTRUCTION-RELATED CRITERIA AIR POLLUTANT EMISSIONS

	Construction Emissions (lbs/day)[a]					
Pollutant	ROG	NO_x	Fugitive PM_{10}[b]	Exhaust PM_{10}	Fugitive $PM_{2.5}$[b]	Exhaust $PM_{2.5}$
Average Daily Construction Emissions (All Phases)	11	43	2	2	1	2
Threshold (avg. lbs/day)	54	54	BMPs	82	BMPs	54
Exceeds Threshold?	No	No	Mitigation	No	Mitigation	No

Notes: lbs = pounds; ROG = reactive organic gases; NO_x = nitrogen oxides, PM = particulate matter; avg = average; BMPs = Best Management Practices.
a. Construction phasing, equipment use (number of equipment, days of equipment mobilization onsite), and demolition and grading volumes 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 SCAQMD 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.
Source: CalEEMod 2013.2.2. Totals may not sum to 100 percent due to rounding. Average daily emissions are based on the construction emissions divided by the total number of active construction days.

Existing federal, State, and local regulations and policies described throughout this chapter protect local and regional air quality. Continued compliance with these regulations and implementation of existing regulations would further reduce impacts.

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. Consequently, construction-related criteria pollutant emissions are *significant*.

Significance Without Mitigation: Significant.

AIR-2b During operation, the Project would not violate any air quality standard or contribute substantially to an existing or projected air quality violation.

The BAAQMD has identified thresholds of significance for criteria pollutant emissions and criteria air pollutant precursors, including ROG, NO_x, 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.

Operational Emissions

Long-term air pollutant emissions generated by a residential development are typically associated with the burning of fossil fuels in cars and trucks (mobile sources); energy use for cooling, heating, and cooking (energy); and landscape equipment (area sources). The primary source of long-term criteria air pollutant emissions generated by

the proposed Project would be emissions produced from Project-generated vehicle trips. The proposed Project would generate 1,020 average daily trips and 3,060 VMT. Table 4.4-7 identifies the existing, total, and net increase in criteria air pollutant emissions associated with the proposed Project.

As shown in Table 4.4-7, the net increase in operational emissions generated by the Project would not exceed the BAAQMD daily thresholds. Consequently, the proposed Project would not cumulatively contribute to the nonattainment designations of the Air Basin, and regional operational phase air quality impacts would be *less than significant*.

Existing federal, State, and local regulations and policies described throughout this chapter protect local and regional air quality. Continued compliance with these regulations and implementation of existing regulations would further reduce impacts.

Significance Without Mitigation: Less than significant.

TABLE 4.4-7 PROJECT CRITERIA AIR POLLUTANT EMISSIONS INVENTORY

	Existing Emissions (Tons/Year)			
Pollutant	ROG	NO_x	PM_{10}	$PM_{2.5}$
Area Sources	0.12	<0.01	<0.01	<0.01
Energy Use	<0.01	0.02	<0.01	<0.01
Mobile Sources	0.09	0.05	0.09	0.02
Total	0.21	0.07	0.09	0.03
Total (lbs/day)	*1.13*	*0.38*	*0.48*	*0.14*
	Proposed Project Emissions (Tons/Year)			
Pollutant	ROG	NO_x	PM_{10}	$PM_{2.5}$
Area Sources	1.36	0.02	0.01	0.01
Energy Use	0.01	0.05	<0.01	<0.01
Mobile Sources	0.42	0.26	0.41	0.11
Total	1.79	0.32	0.42	0.12
Total (lbs/day)	*9.83*	*1.78*	*2.32*	*0.68*

TABLE 4.4-7 PROJECT CRITERIA AIR POLLUTANT EMISSIONS INVENTORY

	Net Increase in Emissions (Tons/Year)			
Pollutant	ROG	NO_x	PM_{10}	$PM_{2.5}$
Area Sources	1.25	0.01	0.01	0.01
Energy Use	<0.01	0.04	<0.01	<0.01
Mobile Sources	0.34	0.20	0.33	0.09
Total	1.59	0.25	0.34	0.10
Threshold	10	10	15	10
Total (lbs/day)	*8.69*	*1.39*	*1.84*	*0.54*
Threshold (lbs/day)	*54*	*54*	*82*	*54*
Exceeds Threshold?	No	No	No	No

Note: ROG = reactive organic gases; NO_x = nitrogen oxides, PM = particulate matter; lbs = pounds
Source: CalEEMod 2013.2.2. Based on the trip generation and VMT for the project provided by Fehr & Peers. Existing structures are pre-2005 Building and Energy Efficiency Standards. New and renovated buildings would be constructed to the 2013 Building & Energy Efficiency Standards (effective January 1, 2014)

AIR-3	The Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is in nonattainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).

This section analyzes potential impacts related to air quality that could occur from a combination of the proposed Project with other past, present, and reasonably foreseeable projects within the Air Basin. Any project that produces a significant project-level regional air quality impact in an area that is in nonattainment adds to the cumulative impact. Due to the extent of the area potentially impacted from cumulative project emissions (the Air Basin); a project is cumulatively significant when project-related emissions exceed the BAAQMD emissions thresholds shown in Table 4.4-5. As described in this chapter, the proposed Project would have no impact or less-than-significant construction impacts with mitigation, operational impacts (including AQMP consistency, odors, and CO hotspots), and on-site community risk and hazards impacts with mitigation.

The proposed Project would site new sensitive receptors near major sources of TACs or generate new sources of TACs. In addition, adjacent sensitive land uses could be potentially impacted by construction activities and cumulative emissions of TACs. Existing stationary sources and high volume roadways were reviewed using

BAAQMD's screening analysis tools.[28] Eight existing stationary sources (seven emergency diesel generators and one gasoline station), one area source (Walnut Creek BART Station bus loop area) and seven high volume roadway (I-680, on/off-ramps and interchange segments, Ygnacio Valley Road, California Boulevard, and Main Street) were identified within 1,000 feet of the Project site. As described in this chapter under AIR-4, operational and construction activities would result in less-than-significant impacts to sensitive receptors with mitigation and would not contribute to existing TAC sources to create an exceedance of BAAQMD's cumulative thresholds of significance.

Therefore, the proposed Project's contribution to cumulative air quality impacts would be *less than significant.*

Existing federal, State, and local regulations and policies described throughout this chapter protect local and regional air quality. Continued compliance with these regulations and implementation of existing regulations would reduce impacts.

Significance Without Mitigation: Less than significant.

AIR-4a	The Project would expose off-site sensitive receptors to substantial pollutant concentrations from construction activities.

Off-Site Community Risk and Hazards During Construction

The proposed Project would elevate concentrations of TACs and $PM_{2.5}$ in the vicinity of sensitive land uses during construction activities. The BAAQMD has developed screening thresholds for assessing potential health risks from construction activities. The Project site is 1.78 acres and therefore receptors would have to be located more than 95 meters away (312 feet) to fall below the BAAQMD's screening thresholds.[29] The nearest residential housing is located approximately 70 feet south from the Project. Consequently, a full HRA of TACs and $PM_{2.5}$ was prepared.

Construction sources evaluated in the HRA include off-road construction equipment. The US EPA ISCST3 dispersion modeling program was used to estimate excess lifetime cancer risks and acute and chronic non-cancer hazard indexes at the nearest sensitive receptors. Results of the analysis are shown in Table 4.4-8.

[28] Bay Area Air Quality Management District (BAAQMD), 2013. Tools and Methodology, http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx.

[29] Bay Area Air Quality Management District (BAAQMD), 2010. Screening Tables for Air Toxics Evaluation During Construction.

TABLE 4.4-8 CONSTRUCTION RISK SUMMARY

	Project Level Risk			
Period	Cancer Risk – Adult	Cancer Risk – Child	Chronic Hazards	$PM_{2.5}$
The Landing Construction Summary (2015-2016)	7.5E-06	40E-06	0.21	0.54 µg/m³
Project-Level Threshold	10E-06	10E-06	1.0	0.3 µg/m³
Exceeds Threshold	No	Yes	No	Yes

Source: BREEZE, Version 7.7.3, 2013.

It should be noted that these health impacts were based on conservative (i.e., health protective) assumptions. The US EPA and Office of Environmental Health Hazard Assessment (OEHHA) note that conservative assumptions used in a risk assessment are intended to ensure that the estimated risks do not underestimate the actual risks.[30] Therefore, the estimated risks do not necessarily represent actual risks experienced by populations at or near a site. The use of conservative assumptions tends to produce upper-bound estimates of risk and usually overestimate exposure and thus risk. The results of the HRA are based on the maximum receptor concentration over a 1.8-year construction exposure period, assuming 24-hour outdoor exposure, and averaged over a 70-year lifetime. The results of the HRA indicate that the incremental cancer risk for sensitive receptors proximate to the site during the construction period is 7.5 x 10^{-6} (7.5 per million) for the adult-scenario and 40 x 10^{-6} (40 per million) for the child-scenario, which could exceed the cancer risk threshold.[31] For noncarcinogenic effects, the hazard index identified for each toxicological endpoint totaled less than one. Therefore, chronic non-carcinogenic hazards are within acceptable limits. In addition, $PM_{2.5}$ annual concentrations would exceed the BAAQMD significance thresholds. Consequently, the Project would expose sensitive receptors to substantial concentrations of air pollutant emissions during construction and impacts would be potentially *significant*.

Existing federal, State, and local regulations and policies described throughout this chapter protect local and regional air quality, including compliance with BAAQMD Regulation 11, Rule 2, which requires control of emissions of asbestos during demolition and renovation. Continued compliance with these regulations would reduce impacts.

Construction emissions could exceed the cancer risk and $PM_{2.5}$ thresholds and potentially expose sensitive receptors to substantial pollutant concentrations.

Significance Without Mitigation: Significant.

[30] Office of Environmental Health Hazard Assessment (OEHHA), 2012. *Air Toxics Hot Spots Program Risk Assessment Guidelines.* US EPA, 2005. *Guideline on Air Quality Models* (Revised). EPA-450/2-78-027R.

[31] For the child exposure scenario, a 9-year exposure period and age sensitivity factor of 4.7 was used to account for the increased sensitivity of children to air pollutants, as per BAAQMD and Office of Environmental Health and Hazard Assessment (OEHHA) guidance.

AIR-4b	The Project would not expose on-site sensitive receptors to substantial pollutant concentrations from off-site emission sources.

On-Site Community Risk and Hazards

On-site health risks and hazards imposed by existing sources (e.g., stationary sources and traffic on adjacent streets and freeways) on the sensitive receptors of the Project (i.e., residents in the apartments) were evaluated pursuant to BAAQMD's methodology. BAAQMD has developed screening thresholds for assessing potential health risks from stationary and mobile sources located within 1,000 feet of the proposed Project. To evaluate nearby sources, BAAQMD's database of existing sources and freeway and surface street screening tables for Contra Costa County were used. In instances where the screening level cancer risk for mobile or stationary sources exceeded the BAAQMD cancer risk significance thresholds, the US EPA ISCST3 dispersion modeling program was used to estimate excess lifetime cancer risks and acute and chronic non-cancer hazard indexes at the proposed Project.

Stationary sources as listed in Table 4.4-9 near the Project site were identified using BAAQMD's Stationary Source Screening Analysis Tool.[32] Eight stationary sources were identified within 1,000 feet of the proposed Project. Based on information received from BAAQMD using the District's Stationary Source Inquiry Form, seven of the eight stationary sources would exceed BAAQMD's screening thresholds for cancer risk.[33] However, after taking into account the distance from the stationary sources to the Project using BAAQMD's diesel and gasoline station distance multipliers, each individual source would not exceed BAAQMD's project-level health risk thresholds.

The mobile sources identified within 1,000 feet of the proposed Project include Interstate 680 (I-680), on- and off-ramps to Ygnacio Valley Road from I-680, the interchange segment from southbound I-680 to westbound State Route 24 (SR-24), Ygnacio Valley Road, California Boulevard, and Main Street. Vehicular emissions were calculated using traffic volumes obtained from the California Department of Transportation (CalTrans) for highway segments and the California Environmental Health Tracking Program (CEHTP) for high volume roadways.[34,35] Vehicular emission factors were obtained using CARB's emission factor model (EMFAC2011). Based on air dispersion modeling results, the mobile sources would not exceed BAAQMD's significance thresholds for cancer risk, chronic hazards, and $PM_{2.5}$.

In addition to stationary and mobile sources, the Walnut Creek BART Station was identified as an emission source of TACs due to diesel buses traveling to-and-from the BART Station. The bus loop portion of the BART Station was evaluated as an area source using bus trip information obtained from Illingworth & Rodkin's Air Quality and Health Risk Assessment for The City of Walnut Creek BART Transit Village Draft EIR (Illingworth & Rodkin,

[32] BAAQMD Stationary Source Screening Analysis Tool can be accessed from BAAQMD's website at http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx

[33] BAAQMD Stationary Source Inquiry Form and distance multiplier forms can be accessed from BAAQMD's website at http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx

[34] Highway traffic volumes can be accessed from CalTrans' website at http://traffic-counts.dot.ca.gov/

[35] High volume roadway traffic volumes can be accessed from CEHTP's website at http://www.ehib.org/traffic_tool.jsp

2012) and emission factors from EMFAC2011.[36] Air dispersion modeling results indicated an excess cancer risk of 8.5 x 10^{-6} (8.5 per million), which could exceed the cancer risk threshold.

The results of the Project-level on-site community risk summary, provided in Table 4.4-9, indicate that the excess cancer risk from each individual stationary and mobile source within 1,000 feet from the project are less than the BAAQMD threshold of 10 in a million for a lifetime cancer risk and the non-carcinogenic chronic hazard index of 1.0. In addition, $PM_{2.5}$ concentrations are below the BAAQMD significance threshold of 0.3 $\mu g/m^3$ for all emission sources. Therefore, the results of this health risk assessment, with respect to on-site risk during the operational phase of the project, indicate that the impact would be *less than significant*.

Existing federal, State, and local regulations and policies described throughout this chapter protect local and regional air quality. Continued compliance with these regulations would reduce impacts.

Significance Without Mitigation: Less than significant.

TABLE 4.4-9 PROJECT ON-SITE RISK SUMMARY

	Project Level Risk		
Stationary Sources	Cancer Risk – Lifetime [a]	Chronic Hazards	$PM_{2.5}$
Buses - Walnut Creek BART Station	8.5E-06	0.006	0.03 $\mu g/m^3$
Generator – Walnut Creek BART Station	3.5E-06	0.011	0.006 $\mu g/m^3$
Generator – SRS Development	2.6E-06	0.001	0.008 $\mu g/m^3$
Generator – Legacy Partners III	1.6E-06	0.007	<0.001 $\mu g/m^3$
Generator – Target	1.0E-08	<0.001	0.001 $\mu g/m^3$
Gasoline Station – USA Gas #863	2.1E-06	0.006	<0.001 $\mu g/m^3$
Generator – Growers Square	2.8E-06	0.02	<0.001 $\mu g/m^3$
Generator – Pacific Bell	6.6E-06	0.033	0.002 $\mu g/m^3$
Generator – Mercer Owners Association	5.7E-06	0.022	0.001 $\mu g/m^3$

[36] Illingworth & Rodkin, 2012. *Air Quality and Health Risk Assessment for City of Walnut Creek BART Transit Village DEIR.*

TABLE 4.4-9 PROJECT ON-SITE RISK SUMMARY

	Project Level Risk		
Stationary Sources	Cancer Risk – Lifetime [a]	Chronic Hazards	$PM_{2.5}$
Mobile Sources			
I-680	7.9E-06	0.01	0.08 µg/m³
Northbound I-680 Off-ramp to Ygnacio Valley Road	4.8E-06	0.008	0.015 µg/m³
Southbound I-680 On-ramp from Ygnacio Valley Road	2.2E-06	0.006	<0.001 µg/m³
State Route 24 Westbound On-ramp from I-680 Southbound	2.4E-06	0.007	0.002 µg/m³
Ygnacio Valley Road	8.5E-06	0.01	0.041 µg/m³
California Boulevard	3.0E-06	0.007	0.005 µg/m³
Main Street	2.1E-06	0.006	<0.001 µg/m³
Project-Level Threshold	10E-06	1.0	0.3 µg/m³
Exceeds Threshold	No	No	No

a. Lifetime cancer risk reported in excess cases per million, applying an age-sensitivity weighting factor to reflect the greater sensitivity of infants and small children to cancer causing TACs.

AIR-4c	The Project would not expose sensitive receptors to substantial pollutant concentrations from CO hotspots.

CO Hotspots

The proposed Project would generate a net increase of 807 average daily trips and 2,420 daily VMT.[37] The proposed Project would not conflict with the C/CAG's CMP because it would not hinder the capital improvements outlined in the CMP or alter regional travel patterns. C/CAG's CMP must be consistent with MTC's/ABAG's Plan Bay Area. An overarching goal of the regional plan 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

[37] Fehr & Peers. 2013, *The Landing at Walnut Creek Transportation Impact Analysis.*

associated GHG emissions reductions. The Project proposes construction of residential units and would be consistent with the overall goals of the MTC/ABAG's Plan Bay Area. Furthermore, the proposed Project would not increase traffic volumes at affected intersections by more than 44,000 vehicles per hour or 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited. Trips associated with the proposed Project would not exceed the screening criteria of the BAAQMD, therefore impacts associated CO hotspots would be *less than significant*.

Existing federal, State, and local regulations and policies described throughout this chapter protect local and regional air quality. Continued compliance with these regulations would reduce impacts.

Significance Without Mitigation: Less than significant.

4.4.4 CUMULATIVE IMPACTS

AIR-5	The Project, in combination with past, present, and reasonably foreseeable projects, could cumulatively contribute to air quality impacts in the San Francisco Bay Area Air Basin.

This section analyzes potential impacts related to air quality that could occur from a combination of the proposed Project with other past, present, and reasonably fore-seeable projects within the Air Basin. Any project that produces a significant project-level regional air quality impact in an area that is in nonattainment adds to the cumulative impact. 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.[38] Due to the extent of the area potentially impacted from cumulative project emissions (the air basin), a project is cumulatively significant when project-related emissions exceed the BAAQMD emissions thresholds shown in Table 4.4-5.

Cumulative Construction and Operational Criteria Air Pollutant Emissions

As described above, the proposed Project would have no impact or less than significant impacts, including for regional construction and operational emissions (including AQMP consistency),CO hotspots, and odor impacts. Therefore, the proposed Project's operational and construction contribution to regional cumulative air quality impacts would be *less than significant*.

Cumulative Community Risk and Hazards

BAAQMD has adopted separate cumulative thresholds for community risk and hazards. Cumulative impacts are described in more detail below.

[38] California Air Resources Board, 2013, Area Designations: Activities and Maps, http://www.arb.ca.gov/desig/adm/adm.htm, accessed on December 13, 2013.

Cumulative Off-Site Construction Community Risk and Hazards

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. Project-related construction emissions would exceed the BAAQMD's project-level significance thresholds for cancer risk and $PM_{2.5}$ (see Table 4.4-8). As the SFBAAB is currently designated a nonattainment area for California PM_{10} and $PM_{2.5}$ AAQS, significant project-related construction emissions would add to the cumulative impact. Therefore, the Project's contribution to cumulative air quality impacts during construction activities would be *significant*.

Cumulative On-Site Community Risk and Hazards

This section analyzes potential impacts related to air quality that could occur from a combination of the proposed project with other past, present, and reasonably foreseeable projects within the San Francisco Bay Area Air Basin (SFBAAB). Any project that produces a significant project-level regional air quality impact in an area that is in nonattainment adds to the cumulative impact. With respect to community risks and hazards, a project would have a cumulative considerable impact if the aggregate of all past, present, and foreseeable future sources within a 1,000-foot radius from the fence line of a source, or from the location of a receptor, plus the contribution from the project exceeds the BAAQMD thresholds shown in Table 4.4-10.

Results of the BAAQMD screening analysis, as shown in Table 4.4-10, indicate that the cumulative cancer risk for a resident of the Project site attributed to all stationary, area, and mobile sources within 1,000 feet of the Project, based on maximum ground-level concentrations for a 70-year, 24-hour outdoor exposure duration, is 64 x 10-6 (roughly 64 per million), which is less than the significance threshold of 100 per million for cumulative sources. For noncarcinogenic effects, the hazard index identified for each toxicological endpoint totaled less than ten. Therefore, chronic noncarcinogenic hazards are within acceptable limits. In addition, $PM_{2.5}$ average annual concentrations are below the BAAQMD cumulative significance thresholds. Therefore, the Project's on-site cumulative air quality impacts due to stationary and mobile sources with respect to cumulative on-site risk and hazards would be *less than significant*.

Table 4.4-10 Cumulative On-Site Risk Summary

	Cumulative Level Risk		
Period	Cancer Risk – Lifetime [a]	Chronic Hazards	$PM_{2.5}$
Buses - Walnut Creek BART Station	8.5E-06	0.006	0.03 µg/m^3
Generator – Walnut Creek BART Station	3.5E-06	0.011	0.006 µg/m^3
Generator – SRS Development	2.6E-06	0.001	0.008 µg/m^3

Table 4.4-10 Cumulative On-Site Risk Summary

	Cumulative Level Risk		
Period	Cancer Risk – Lifetime [a]	Chronic Hazards	$PM_{2.5}$
Generator – Legacy Partners III	1.6E-06	0.007	<0.001 µg/m³
Generator – Target	1.0E-08	<0.001	0.001 µg/m³
Gasoline Station – USA Gas #863	2.1E-06	0.006	<0.001 µg/m³
Generator – Growers Square	2.8E-06	0.02	<0.001 µg/m³
Generator – Pacific Bell	6.6E-06	0.033	0.002 µg/m³
Generator – Mercer Owners Association	5.7E-06	0.022	0.001 µg/m³
Mobile Sources			
I-680	7.9E-06	0.01	0.08 µg/m³
Northbound I-680 Off-ramp to Ygnacio Valley Road	4.8E-06	0.008	0.015 µg/m³
Southbound I-680 On-ramp from Ygnacio Valley Road	2.2E-06	0.006	<0.001 µg/m³
State Route 24 Westbound On-ramp from I-680 Southbound	2.4E-06	0.007	0.002 µg/m³
Ygnacio Valley Road	8.5E-06	0.01	0.041 µg/m³
California Boulevard	3.0E-06	0.007	0.005 µg/m³
Main Street	2.1E-06	0.006	<0.001 µg/m³
Total Risk	64E-06	0.16	0.19 µg/m³
Threshold	100E-06	10	0.8 µg/m³
Exceeds Threshold	No	No	No

a. Lifetime cancer risk reported in excess cases per million, applying an age-sensitivity weighting factor to reflect the greater sensitivity of infants and small children to cancer causing TACs.
Source: BREEZE, Version 7.7.3, 2013.

Existing federal, State, and local regulations and policies described throughout this chapter protect local and regional air quality. While continued compliance with these regulations would reduce impacts, construction emissions could exceed the cancer risk and $PM_{2.5}$ thresholds and could cumulatively contribute to air quality impacts in the San Francisco Bay Area Air Basin.

Significance Without Mitigation: Significant.

4.4.5 SUMMARY OF SIGNIFICANT IMPACTS AND MITIGATION MEASURES

AIR-2a	During construction, the Project could violate any air quality standard or contribute substantially to an existing or projected air quality violation.

If uncontrolled, Fugitive Dust (PM_{10} and $PM_{2.5}$) levels downwind of actively disturbed areas during construction could violate any air quality standard or contribute substantially to an existing or projected air quality violation.

Mitigation Measure AIR-2a: The Project's construction contractor shall comply with the following BAAQMD Best Management Practices for reducing construction emissions of PM_{10} and $PM_{2.5}$:

- Water all active construction areas at least twice daily, or as often as needed to control dust emissions. Watering should be sufficient to prevent airborne dust from leaving the site. Increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour. Reclaimed water should 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 mph.
- Replant vegetation in disturbed areas as quickly as possible.
- Install sandbags or other erosion control measures to prevent silt runoff from public roadways.

Significance With Mitigation: Less than significant. Adherence to the BAAQMD's BMPs for reducing construction emissions of PM_{10} and $PM_{2.5}$ would ensure that ground-disturbing activities would not generate a significant amount of fugitive dust.

AIR-4a	The Project would expose off-site sensitive receptors to substantial pollutant concentrations from construction activities.

On-site construction emissions would generate a substantial increase in pollutant concentrations at nearby sensitive receptors.

Mitigation Measure AIR-4a: The applicant shall adhere to one of the following:

(a) The construction contractor shall use Level 3 Diesel Particulate Filters (DPFs) for construction equipment over 75 horsepower. These types of filters are capable of reducing particulate matter emissions by 85 percent. – or –

(b) Alternatively, the City shall allow the Applicant to prepare a revised Construction Health Risk Assessment (HRA). If the revised Construction HRA can demonstrate that construction toxic air contaminants (TAC) and fine particulate matter ($PM_{2.5}$) emissions can be mitigated under the Bay Area Air Quality Management District's (BAAQMD) threshold of 10 in a million for a lifetime cancer risk using only Level 2 DPFs, which are capable of reducing particulate matter emissions by 50 percent, or a combination of Level 2 and Level 3 DPFs, then the construction contractor shall use the required mix of Level 2 and Level 3 DPF specified in the revised Construction HRA for construction equipment over 75 horsepower. The revised HRA shall be approved by the City during the compliance review process, prior to construction.

Under either scenario above, a list of construction equipment by type and model year shall be maintained by the construction contractor on-site. The construction contractor shall ensure that all construction equipment is properly serviced and maintained to the manufacturer's standards to reduce operational emissions, and shall limit nonessential idling of construction equipment to no more than five consecutive minutes.

Significance With Mitigation: Less than significant. Adherence to Mitigation Measure AQ-4a would reduce particulate matter emissions by approximately 85 percent. The mitigated health risk values with use of Level 3 DPFs were calculated and are summarized in Table 4.4-11. For these calculations, it was assumed that an adult would spend 73 percent of the time at home and a child would spend 75 percent of the time at home, as per OEHHA guidance. However, if the adults and children spent 100 percent of their time at home, the calculated risk levels would still be below threshold values. The results indicate that with mitigation, the excess cancer risk for the adult and child exposure scenarios would be less than the threshold values. Additionally, the $PM_{2.5}$ annual concentrations would be below the significance threshold with mitigation. Consequently, the Project would not expose sensitive receptors to substantial concentrations of air pollutant emissions during construction and impacts would be less than significant with mitigation.

TABLE 4.4-11 MITIGATED CONSTRUCTION RISK SUMMARY

	Project Level Risk with Level 3 Diesel Particulate Filters			
Period	Cancer Risk – Adult	Cancer Risk – Child	Chronic Hazards	$PM_{2.5}$
The Landing Construction Summary (2015-2016)	8.8E-07	4.9E-06	0.034	0.16 µg/m^3
Project-Level Threshold	10E-06	10E-06	1.0	0.3 µg/m^3
Exceeds Threshold	No	No	No	No

Source: BREEZE, Version 7.7.3, 2013. Mitigated scenario includes retrofitting of all off-road equipment greater than 75 HP with Level 3 diesel particulate filters.

AIR-5	The Project, in combination with past, present, and reasonably foreseeable projects, could cumulatively expose off-site sensitive receptors to substantial pollutant concentrations from construction activities.

Mitigation Measure AIR-5: Implementation of Mitigation Measure AIR-4a listed above would reduce the Project's cumulative contribution to particulate matter emissions by approximately 85 percent with Level 3 DPFs and the excess cancer risk for the adult and child exposure scenarios would be less than the threshold values. Additionally, the $PM_{2.5}$ annual concentrations would be below the significance threshold with implementation of this mitigation measure. Consequently, the Project's contribution to cumulative air quality impacts during construction activities would be less than significant with mitigation.

Significance With Mitigation: Less than significant.