3.3 - Air Quality/Greenhouse Gas Emissions

3.3.1 - Introduction

This section describes the existing air quality and greenhouse gas emissions and potential effects from project implementation on the site and its surrounding area. Analysis in this section is based on air emissions modeling performed by Michael Brandman Associates (MBA), which included construction and operational air quality modeling, and greenhouse gas emissions modeling. CalEEMod 2011 was used to quantify project related emissions. Carbon monoxide hotspot analysis was performed using CALINE4. Air quality model output, is provided in Appendix C, Air Quality Supporting Data.

3.3.2 - Environmental Setting

San Francisco Area Air Basin

The project is located within the San Francisco Bay Area Air Basin (Air Basin), which consists of the entirety of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara counties; the western portion of Solano County; and the southern portion of Sonoma County. The Air Basin is characterized by complex terrain consisting of coastal mountain ranges, inland valleys, and bays. Elevations of 1,500 feet are common in the higher terrain of this area.

Regional Climate

Meteorology is the study of weather and climate. Weather refers to the state of the atmosphere at a given time and place relating to temperature, air pressure, humidity, cloudiness, and precipitation. Weather refers to conditions over short periods; conditions over long periods, generally at least 30 to 50 years, are referred to as climate. Climate in a narrow sense is usually defined as the "average weather," or more rigorously, as the statistical description in terms of the mean and variability of relevant quantities over a period ranging from months to thousands or millions of years. These quantities most often are surface variables such as temperature, precipitation, and wind.

A semi-permanent, high-pressure area centered over the northeastern Pacific Ocean dominates the summer climate of the West Coast. Because this high-pressure cell is quite persistent, storms rarely affect the California coast during the summer. Thus, the conditions that persist along the coast of California during summer are a northwest airflow and negligible precipitation. A thermal low-pressure area from the Sonoran-Mojave Desert also causes air to flow onshore over the San Francisco Bay Area much of the summer.

The steady northwesterly flow around the eastern edge of the Pacific High (a high-pressure cell) exerts stress on the ocean surface along the west coast. This induces upwelling of cold water from below. Upwelling produces a band of cold water off San Francisco that is approximately 80 miles wide. During July, the surface waters off San Francisco are 3 degrees Fahrenheit (°F) cooler than those off Vancouver, British Columbia, more than 900 miles to the north. Air approaching the

California coast, already cool and moisture-laden from its long trajectory over the Pacific, is further cooled as it flows across this cold bank of water near the coast, thus accentuating the temperature contrast across the coastline. This cooling is often sufficient to produce condensation—a high incidence of fog and stratus clouds along the Northern California coast in summer.

Winds

In summer, the northwest winds to the west of the Pacific coastline are drawn into the interior through the gap in the western Coast Ranges, known as the Golden Gate, and over the lower portions of the San Francisco Peninsula. Immediately to the south of Mount Tamalpais, the northwesterly winds accelerate considerably and come more nearly from the west as they stream through the Golden Gate. This channeling of the flow through the Golden Gate produces a jet that sweeps eastward but widens downstream, producing southwest winds at Berkeley and northwest winds at San Jose; a branch curves eastward through the Carquinez Straits and into the Central Valley. Wind speeds may be locally strong in regions where air is channeled through a narrow opening such as the Golden Gate, the Carquinez Strait, or San Bruno Gap. For example, the average wind speed at San Francisco International Airport from 3 a.m. to 4 p.m. in July is about 20 miles per hour (mph), compared with only about 8 mph at San Jose and less than 7 mph at the Farallon Islands.

The sea breeze between the coast and the Central Valley commences near the surface along the coast in late morning or early afternoon; it may first be observed only through the Golden Gate. Later in the day, the layer deepens and intensifies while spreading inland. As the breeze intensifies and deepens, it flows over the lower hills farther south along the peninsula. This process frequently can be observed as a bank of stratus clouds "rolling over" the coastal hills on the west side of the bay. The depth of the sea breeze depends in large part upon the height and strength of the inversion. The generally low elevation of this stable layer of air prevents marine air from flowing over the coastal hills. It is unusual for the summer sea breeze to flow over terrain exceeding 2,000 feet in elevation.

In winter, the Air Basin experiences periods of storminess, moderate-to-strong winds, and periods of stagnation with very light winds. Winter stagnation episodes are characterized by outflow from the Central Valley, nighttime drainage flows in coastal valleys, weak onshore flows in the afternoon, and otherwise light and variable winds.

Inversions

A primary factor in air quality is the mixing depth (i.e., the vertical air column available for dilution of contaminant sources). Generally, the temperature of air decreases with height, creating a gradient from warmer air near the ground to cooler air at elevation. This is caused by most of the sun's energy being converted to sensible heat at the ground, which, in turn, warms the air at the surface. The warm air rises in the atmosphere, where it expands and cools. Sometimes, however, the temperature of air actually increases with height. This condition is known as temperature inversion, because the temperature profile of the atmosphere is "inverted" from its usual state. Over the Air Basin, the

frequent occurrence of temperature inversions limits mixing depth and, consequently, limits the availability of air for dilution.

Regional Air Quality

Emissions Inventory Background

An emissions inventory is an account of the amount of air pollution generated by various emissions sources. To estimate the sources and quantities of pollution, the California Air Resources Board (ARB), in cooperation with local air districts and industry, maintains an inventory of California emission sources. Sources are subdivided into the four major emission categories: mobile, stationary, areawide, and natural sources.

Mobile sources include on-road sources and off-road mobile sources. The on-road emissions inventory, which includes automobiles, motorcycles, and trucks, is an estimation of population, activity, and emissions of the on-road motor vehicles used in California. The off-road emissions inventory is an estimate of the population, activity, and emissions of various off-road equipment, including recreational vehicles, farm and construction equipment, lawn and garden equipment, forklifts, locomotives, commercial marine ships, and marine pleasure craft. ARB staff estimates mobile source emissions with assistance from districts and other government agencies.

Stationary sources are large, fixed sources of air pollution, such as power plants, refineries, and manufacturing facilities. Stationary sources also include aggregated point sources. These include many small point sources, or facilities, that are not inventoried individually but are estimated as a group and reported as a single-source category. Examples include gas stations and dry cleaners. Each of the local air districts estimates the emissions for the majority of stationary sources within its jurisdiction. Stationary source emissions are based on estimates made by facility operators and local air districts. Emissions from specific facilities can be identified by name and location.

Areawide sources include source categories associated with human activity, and these emissions take place over a wide geographic area. Consumer products, fireplaces, farming operations (such as tilling), and unpaved road dust are examples of areawide sources. ARB and local air district staffs estimate areawide emissions. Emissions from areawide sources may be either from small, individual sources, such as residential fireplaces, or from widely distributed sources that cannot be tied to a single location, such as consumer products and dust from unpaved roads.

Natural, or non-anthropogenic, sources include source categories with naturally occurring emissions such as geogenic (e.g., petroleum seeps), wildfires, and biogenic emissions from plants. ARB staff and the air districts also estimate natural sources.

Santa Clara Emissions Inventory

The 2010 emissions inventory for Santa Clara County is available in ARB's 2009 Almanac Emission Projection Data. Table 3.3-1 summarizes the estimated 2010 emissions for the main pollutants of concern in Santa Clara County.

Table 3.3-1: Santa Clara County Air Pollutant Emissions Inventory

Emission Category	Tons per Day			
	ROG	NO_x	PM_{10}	$PM_{2.5}$
Stationary Sources	30.7	10.8	3.0	2.1
Areawide Sources	21.5	4.0	44.1	11.5
Mobile Sources	36.8	68.8	4.0	3.0
Natural Sources	29.2	0.2	0.6	0.5
Total Santa Clara County	**118.4**	**83.8**	**51.7**	**17.1**

Notes:
ROG = reactive organic gases; NO_x = nitrogen oxides; PM_{10} and $PM_{2.5}$ = particulate matter
Source: California Air Resources Board, 2011.

ROG. Mobile sources contributed approximately 31 percent of the 2010 reactive organic gases (ROG) emissions, while stationary sources and natural sources each contributed approximately 25 percent of the inventory. Areawide sources accounted for approximately 18 percent of the 2010 emissions inventory.

NO_x. Mobile sources generated the majority of oxides of nitrogen (NO_x) emissions in Santa Clara County at approximately 82 percent of the total NO_x inventory.

PM_{10}. For particulate matter smaller than 10 microns in diameter (PM_{10}), areawide sources contributed 85 percent of the 2010 inventory. The main PM_{10}-generating areawide sources include paved road dust, unpaved road dust, construction and demolition, and residential fuel combustion.

$PM_{2.5}$. Areawide sources contributed more than 65 percent of the 2010 inventory of particulate matter smaller than 2.5 microns in diameter ($PM_{2.5}$), and mobile sources generated approximately 17 percent of the inventory. The main $PM_{2.5}$-generating areawide source was residential fuel combustion, followed by paved road dust and farming operations.

Local Climate

The project is located in the Santa Clara Valley subregion of the Air Basin, between the Santa Cruz Mountains to the west, the Diablo Range to the east, the San Francisco Bay to the north, and the convergence of the Gabilan Range and Diablo Range to the South. Temperatures are warm in summer, under mostly clear skies, although a relatively large, diurnal range results in cool nights. Winter temperatures are mild, except for very cool but generally frostless mornings. Temperatures in

the Morgan Hill area range from an average high of 88.1°F in July to an average low of 37.0°F in December. Rainfall averages 20.96 inches annually, most of which falls between October and March. Nearly all precipitation falls in the form of rain.

The wind patterns in the Valley are influenced greatly by the terrain, resulting in a prevailing flow roughly parallel to the Valley's northwest-southeast axis with a north-northwesterly sea breeze extending up the valley during the afternoon and early evening and a light south-southeasterly drainage flow occurring during the late evening and early morning. In summer, a convergence zone is sometimes observed in the southern end of the Valley between Gilroy and Morgan Hill, when air flowing from the Monterey Bay through the Pajaro Gap gets channeled northward into the south end of the Santa Clara Valley and meets with the prevailing north-northwesterlies. Speeds are greatest in the spring and summer, and least in the fall and winter. Nighttime and early morning hours experience light winds and are frequently calm in all seasons, while summer afternoon and evenings are quite breezy. Strong winds are rare, coming only with an occasional winter storm.

The air pollution potential of the Santa Clara Valley is high. The area has a large population and the largest complex of mobile sources in the Air Basin making it a major source of carbon monoxide, particulates, and photochemical air pollution. In addition, ozone precursors from San Francisco, San Mateo and Alameda counties can be carried along by the prevailing winds to the Santa Clara Valley making it also a major ozone receptor. Geographically, the valley tends to channel pollutants to the southeast with its northwest/southeast orientation, and concentrate pollutants by its narrowing to the southeast. Meteorologically, on high-ozone low-inversion summer days, the pollutants can be recirculated by the prevailing northwesterlies in the afternoon and the light drainage flow in the late evening and early morning, increasing the impact of emissions significantly. On high particulate and carbon monoxide days during late fall and winter, clear, calm, and cold conditions associated with a strong surface based temperature inversion prevail.

Local Air Quality

Existing levels of ambient air quality and historical trends and projections of air quality in the project area are best documented by measurements made near the project site. BAAQMD currently operates four ambient air monitoring stations within the County of Santa Clara County, from San Jose in the north to Gilroy in the South. The San Martin ambient air monitoring station (San Martin station) is located nearest the project, located approximately 2 miles south of the project boundary.

The San Martin station measures ambient levels of 1-hour ozone and 8-hour ozone. The Gilroy ambient air monitoring station (Gilroy station), located approximately 9 miles south of the project, measures 1-hour and 8-hour ozone, as well as $PM_{2.5}$. The nearest ambient air monitoring stations to record PM_{10} or carbon monoxide are in San Jose, approximately 21 miles northwest of the project, which is not representative of air quality in the project area because of the distance upwind and the

urban location. Table 3.3-2 summarizes 2010 through 2012 published monitoring data for the San Martin and Gilroy stations.

Table 3.3-2: Local Air Quality Monitoring Summary

Air Pollutant	Averaging Time	Averaging Time (Units)	2010	2011	2012
Ozone[1]	1 hour	Max 1 Hour (ppm)	0.109	0.091	0.092
		Days > CAAQS (0.09 ppm)	3	0	0
	8 hour	Max 8 Hour (ppm)	0.088	0.072	0.077
		Days > CAAQS (0.07 ppm)	8	2	4
		Days > NAAQS (0.075 ppm)	5	0	1
Fine particulate matter ($PM_{2.5}$)[2]	Annual	State Annual Average ($\mu g/m^3$)	*	*	*
	24 hour	Max 24 Hour ($\mu g/m^3$)	29.9	35.5	20.3
		Estimated Days > NAAQS (35 $\mu g/m^3$)	0.0	1.0	0.00

Abbreviations:
> = exceed ppm = parts per million $\mu g/m^3$ = micrograms per cubic meter
* = insufficient/no data max = maximum
CAAQS = California Ambient Air Quality Standard NAAQS = National Ambient Air Quality Standard
[1] Measurements from the San Martin station.
[2] Measurements from the Gilroy station.
Sources: California Air Resources Board, 2013.

Local Sources of Air Pollution

United States Highway 101 (US 101) abuts the southwest portion of the project's boundary, and is parallel to the northwest project boundary. According to California Department of Transportation traffic volume data, US 101 had up to 118,000 average annual daily trips north of the intersection with Tennant Avenue (located immediately west of the project) in 2011. The section of US 101 adjacent to the proposed project meets the BAAQMD's definition of a "significant traffic volume roadway," which includes freeways or arterial roadway with greater than 10,000 vehicles per day.

In addition, one BAAQMD-permitted stationary source is located within 1,000 feet of the project. A Verizon Wireless station (BAAQMD plant number 18616) is located within the project boundary. Other local emissions include those associated with residential land uses including emissions from the combustion of natural gas in heating systems, landscaping equipment emissions, and use of consumer products that release hydrocarbon emissions.

Sensitive Receptors

Certain populations are particularly sensitive to the health impacts of air pollution, such as children, the elderly, and persons with preexisting respiratory or cardiovascular illness. BAAQMD defines typical sensitive receptors as residences, schools, playgrounds, childcare centers, athletic facilities, hospitals, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement

homes. There are residences located throughout the Morgan Hill SEQ Area, as well as immediately north, south and east of the SEQ Area. In addition, the following sensitive receptors have been identified (all distances are approximate):

Schools/Daycare

- Morgan Hill Parent Child Nursery (0.2 mile)
- Nordstrom Elementary (0.2 mile)
- Jackson Elementary (0.3 mile)
- Barrett Elementary (0.2 mile)

Parks and Recreation Areas

- Morgan Hill Aquatics Center (adjacent to project boundary)
- Outdoor Sports Center (adjacent to project boundary)
- Nordstrom Park (0.3 mile)
- Conte Gardens Park (0.3 mile)
- Jackson Park (0.2 mile)
- The Institute Golf Course (0.2 mile)

Pollutants of Concern

For reasons described in Section 3.3.3, Regulatory Framework, the criteria pollutants of greatest concern for the project area are ozone, inhalable particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$). Although the area is in attainment of the CO standards, there is a potential for CO hotspots on congested roadways and at congested intersections. Other pollutants of concern are toxic air contaminants (TACs). The proposed project is not expected to produce air emissions containing hydrogen sulfide, sulfates, lead, and vinyl chloride; therefore, these pollutants will not be discussed.

Ozone

Ozone is not emitted directly into the air, but is a regional pollutant formed by a photochemical reaction in the atmosphere. Ozone precursors, which include ROG and NO_x, react in the atmosphere in the presence of sunlight to form ozone. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer air pollution problem. Often, the effects of emitted ROG and NO_x are felt a distance downwind of the emission sources. Ozone is subsequently considered a regional pollutant. Ground-level ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and can cause substantial damage to vegetation and other materials.

Ozone can irritate lung airways and cause inflammation much like a sunburn. Other symptoms include wheezing, coughing, pain when taking a deep breath, and breathing difficulties during exercise or outdoor activities. People with respiratory problems are most vulnerable, but even healthy people who are active outdoors can be affected when ozone levels are high. Chronic ozone exposure

can induce morphological (tissue) changes throughout the respiratory tract, particularly at the junction of the conducting airways and the gas exchange zone in the deep lung. Anyone who spends time outdoors in the summer is at risk, particularly children and other people who are more active outdoors. Even at very low levels, ground-level ozone triggers a variety of health problems, including aggravated asthma, reduced lung capacity, and increased susceptibility to such respiratory illnesses as pneumonia and bronchitis.

Ozone also damages vegetation and ecosystems. It leads to reduced agricultural crop and commercial forest yields; reduced growth and survivability of tree seedlings; and increased susceptibility to diseases, pests, and other stresses such as harsh weather. In addition, ozone causes damage to buildings, rubber, and some plastics.

Reactive Organic Gases

ROG are defined as any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participate in atmospheric photochemical reactions. ROG consist of nonmethane hydrocarbons and oxygenated hydrocarbons. Hydrocarbons are organic compounds that contain only hydrogen and carbon atoms. Nonmethane hydrocarbons are hydrocarbons that do not contain the unreactive hydrocarbon methane. Oxygenated hydrocarbons are hydrocarbons with oxygenated functional groups attached.

There are no state or national ambient air quality standards for ROG because they are not classified as criteria pollutants. They are regulated, however, because a reduction in ROG emissions reduces certain chemical reactions that contribute to the formulation of ozone. ROG may also form organic aerosols in the atmosphere, which contribute to higher levels of particulate matter and lower visibility.

Nitrogen Oxides

During combustion of fossil fuels, oxygen reacts with nitrogen to produce nitrogen oxides or NO_x. This occurs primarily in motor vehicle internal combustion engines and fossil fuel-fired electric utility facilities and industrial boilers. The pollutant NO_x is a concern because it is an ozone precursor, which means that it helps to form ozone. When NO_x and ROG are released in the atmosphere, they can chemically react with one another in the presence of sunlight and heat to form ozone. NO_x can also be a precursor to PM_{10} and $PM_{2.5}$.

Because NO_x and ROG are ozone precursors, the health effects associated with ozone (as discussed above) are also indirect health effects associated with significant levels of NO_x and ROG emissions.

Particulate Matter (PM_{10} and $PM_{2.5}$)

PM is the term for a mixture of solid particles and liquid droplets found in the air. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye. Others are so small they can only be detected using an electron microscope.

Particle pollution includes "inhalable coarse particles," with diameters larger than 2.5 micrometers and smaller than 10 micrometers, and "fine particles," with diameters that are 2.5 micrometers and smaller. For reference, $PM_{2.5}$ is approximately one-thirtieth the size of the average human hair.

These particles come in many sizes and shapes and can contain hundreds of different chemicals. Some particles, known as primary particles, are emitted directly from a source, such as construction sites, unpaved roads, fields, smokestacks, or fires. Others form in complicated reactions in the atmosphere from chemicals, such as sulfur dioxides and nitrogen oxides that are emitted from power plants, industrial activity, and automobiles. These particles, known as secondary particles, make up most of the fine particle pollution in the United States.

Particle exposure can lead to a variety of health effects. For example, numerous studies link particle levels to increased hospital admissions and emergency room visits—and even to death from heart or lung diseases. Both long- and short-term particle exposures have been linked to health problems. Long-term exposures, such as those experienced by people living for many years in areas with high particle levels, have been associated with problems such as reduced lung function, the development of chronic bronchitis, and even premature death. Short-term exposures to particles (hours or days) can aggravate lung disease, causing asthma attacks and acute bronchitis, and may increase susceptibility to respiratory infections. In people with heart disease, short-term exposures have been linked to heart attacks and arrhythmias. Healthy children and adults have not been reported to suffer serious effects from short-term exposures, although they may experience temporary minor irritation when particle levels are elevated.

Carbon Monoxide

CO is a colorless, odorless gas that is formed when carbon in fuel is not burned completely. It is a component of motor vehicle exhaust, which contributes about 56 percent of all CO emissions nationwide. Higher levels of CO generally occur in areas with heavy traffic congestion.

CO is a public health concern because it combines readily with hemoglobin, reducing the amount of oxygen transported in the bloodstream. High levels of CO can affect even healthy people. At extremely high levels, CO is poisonous and can cause death.

Motor vehicles are the dominant source of CO emissions in most areas. CO is described as having only a local influence because it dissipates quickly. High CO levels develop primarily during winter, when periods of light winds combine with the formation of ground-level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Because CO is a product of incomplete combustion, motor vehicles exhibit increased CO emission rates at low air temperatures. High CO concentrations occur in areas of limited geographic size, sometimes referred to as hot spots.

Toxic Air Contaminants

In addition to the above-listed criteria pollutants, TACs, also known as hazardous air pollutants, are another group of pollutants of concern. A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations. In general, for those TACs that may cause cancer, there is no concentration that does not present some risk. In other words, there is no threshold level below which adverse health impacts are not expected to occur. This contrasts with the criteria pollutants for which acceptable levels of exposure can be determined and for which the state and federal governments have set ambient air quality standards.

According to the California Almanac of Emissions and Air Quality, the majority of the estimated health risk from TACs can be attributed to relatively few compounds, the most important being diesel particulate matter (DPM) from diesel-fueled engines. Another TAC of concern in Santa Clara County is asbestos since there is a known potential for naturally occurring asbestos.

Diesel Particulate Matter

The ARB identified the PM emissions from diesel-fueled engines as a TAC in August 1998 under California's TAC program. The State of California, after a 10-year research program, determined in 1998 that DPM from diesel-fueled engines is a human carcinogen and that chronic (long-term) inhalation exposure to DPM poses a chronic (long-term) health risk. The California Office of Environmental Health Hazard Assessment (OEHHA) recommends using a 70-year exposure duration for determining residential cancer risks. DPM is emitted from both mobile and stationary sources. According to the ARB's 2009 Almanac, on-road diesel-fueled vehicles contribute approximately 38 percent of the statewide total inventory, with an additional 60 percent attributed to other mobile sources such as construction and mining equipment, agricultural equipment, and transport refrigeration units. The remaining DPM inventory was generated by stationary point sources and aggregated stationary sources.

Asbestos

Asbestos is listed as a TAC by ARB and as a Hazardous Air Pollutant (HAP) by the United States Environmental Protection Agency (EPA). Asbestos is of special concern in Santa Clara County because it occurs naturally in surface deposits of several types of rock formations. The nearest known locations of naturally occurring asbestos are located less than 1 mile east of the SEQ Area. Specifically, the land between and just west of Anderson Lake and Coyote Lake has been identified as an area more likely to contain naturally occurring asbestos by the California Division of Mines and Geology. Therefore, the project is sufficiently close from the nearest known location of naturally occurring asbestos and disturbance of naturally occurring asbestos during project construction is a concern.

Crushing or breaking these rocks, through construction or other means, can release asbestoform fibers into the air. Asbestos emissions can result from the sale or use of asbestos-containing materials, road surfacing with such materials, grading activities, and surface mining. The risk of disease is dependent upon the intensity and duration of exposure. When inhaled, asbestos fibers may remain in the lungs and with time may be linked to such diseases as asbestosis, lung cancer, and mesothelioma.

Climate Change

Climate change is a change in the average weather of the earth that is measured by changes in wind patterns, storms, precipitation, and temperature. These changes are assessed using historical records of temperature changes that have occurred in the past, such as during previous ice ages. Many of the concerns regarding climate change use this data to extrapolate a level of statistical significance specifically focusing on temperature records from the last 150 years (the Industrial Age) that differ from previous climate changes in rate and magnitude.

Natural processes and human activities emit greenhouse gases. The presence of greenhouse gases in the atmosphere affects the earth's temperature. Without the natural heat-trapping effect of greenhouse gases, the earth's surface would be about 34 degrees Centigrade (°C) cooler. However, it is believed that emissions from human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations.

The United Nations Intergovernmental Panel on Climate Change (IPCC) constructed several emission trajectories of greenhouse gases needed to stabilize global temperatures and climate change impacts. The IPCC predicted that global mean temperature change from 1990 to 2100, given six scenarios, could range from 1.1°C to 6.4°C. Regardless of analytical methodology, global average temperatures and sea levels are expected to rise under all scenarios.

Greenhouse Gases

Gases that trap heat in the atmosphere are referred to as greenhouse gases. The effect is analogous to the way a greenhouse retains heat. Common greenhouse gases include water vapor, carbon dioxide, methane, nitrous oxides, chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, ozone, and aerosols. Natural processes and human activities emit greenhouse gases. The presence of greenhouse gases in the atmosphere affects the earth's temperature. It is believed that emissions from human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations.

Climate change is driven by forcings and feedbacks. Radiative forcing is the difference between the incoming energy and outgoing energy in the climate system. Positive forcing tends to warm the surface while negative forcing tends to cool it. Radiative forcing values are typically expressed in watts per square meter. A feedback is a climate process that can strengthen or weaken a forcing. For

example, when ice or snow melts, it reveals darker land underneath which absorbs more radiation and causes more warming. The global warming potential is the potential of a gas or aerosol to trap heat in the atmosphere. The global warming potential of a gas is essentially a measurement of the radiative forcing of a greenhouse gas compared with the reference gas, carbon dioxide.

Individual greenhouse gas compounds have varying global warming potential and atmospheric lifetimes. Carbon dioxide, the reference gas for global warming potential, has a global warming potential of one. The global warming potential of a greenhouse gas is a measure of how much a given mass of a greenhouse gas is estimated to contribute to global warming. To describe how much global warming a given type and amount of greenhouse gas may cause, the carbon dioxide equivalent is used. The calculation of the carbon dioxide equivalent is a consistent methodology for comparing greenhouse gas emissions since it normalizes various greenhouse gas emissions to a consistent reference gas, carbon dioxide. For example, methane's warming potential of 21 indicates that methane has 21 times greater warming affect than carbon dioxide on a molecule per molecule basis. A carbon dioxide equivalent is the mass emissions of an individual greenhouse gas multiplied by its global warming potential. Greenhouse gases defined by Assembly Bill (AB) 32 (see the Climate Change Regulatory Environment section for a description) include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. They are described in Table 3.3-3.

Table 3.3-3: Description of Greenhouse Gases

Greenhouse Gas	Description and Physical Properties	Sources
Nitrous oxide	Nitrous oxide (laughing gas) is a colorless greenhouse gas. It has a lifetime of 114 years. Its global warming potential is 310.	Microbial processes in soil and water, fuel combustion, and industrial processes.
Methane	Methane is a flammable gas and is the main component of natural gas. It has a lifetime of 12 years. Its global warming potential is 21.	Methane is extracted from geological deposits (natural gas fields). Other sources are landfills, fermentation of manure, and decay of organic matter.
Carbon dioxide	Carbon dioxide (CO_2) is an odorless, colorless, natural greenhouse gas. Carbon dioxide's global warming potential is 1. The concentration in 2005 was 379 parts per million (ppm), which is an increase of about 1.4 ppm per year since 1960.	Natural sources include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources are from burning coal, oil, natural gas, and wood.
Chlorofluorocarbons	These are gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. They are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the earth's surface). Global warming potentials range from 3,800 to 8,100.	Chlorofluorocarbons were synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. They destroy stratospheric ozone. The Montreal Protocol on Substances that Deplete the Ozone Layer prohibited their production in 1987.

Table 3.3-3 (cont.): Description of Greenhouse Gases

Greenhouse Gas	Description and Physical Properties	Sources
Hydrofluorocarbons	Hydrofluorocarbons are a group of greenhouse gases containing carbon, chlorine, and at least one hydrogen atom. Global warming potentials range from 140 to 11,700.	Hydrofluorocarbons are synthetic manmade chemicals used as a substitute for chlorofluorocarbons in applications such as automobile air conditioners and refrigerants.
Perfluorocarbons	Perfluorocarbons have stable molecular structures and only break down by ultraviolet rays about 60 kilometers above Earth's surface. Because of this, they have long lifetimes, between 10,000 and 50,000 years. Global warming potentials range from 6,500 to 9,200.	Two main sources of perfluorocarbons are primary aluminum production and semiconductor manufacturing.
Sulfur hexafluoride	Sulfur hexafluoride is an inorganic, odorless, colorless, and nontoxic, nonflammable gas. It has a lifetime of 3,200 years. It has a high global warming potential, 23,900.	This gas is manmade and used for insulation in electric power transmission equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas.
Sources: United Nations Intergovernmental Panel on Climate Change, 2007.		

Other greenhouse gases include water vapor, ozone, and aerosols. Water vapor is an important component of our climate system and is not regulated. Ozone and aerosols are short-lived greenhouse gases; global warming potentials for short-lived greenhouse gases are not defined by the IPCC. Aerosols can remain suspended in the atmosphere for about a week and can warm the atmosphere by absorbing heat and cool the atmosphere by reflecting light. Black carbon is a type of aerosol that can also cause warming from deposition on snow.

Although there could be health effects resulting from changes in the climate and the consequences that can bring about, inhalation of greenhouse gases at levels currently in the atmosphere would not result in adverse health effects, with the exception of ozone and aerosols (particulate matter). The potential health effects of ozone and particulate matter are discussed previously in Pollutants of Concern. At very high indoor concentrations (not at levels existing outside), carbon dioxide, methane, sulfur hexafluoride, and some chlorofluorocarbons can cause suffocation as the gases can displace oxygen.

Greenhouse Gas Emissions Inventory and Trends

This section provides the greenhouse gas emissions inventories for multiple geographic ranges, including world-wide, national, state, regional, and local inventories.

Emissions worldwide were approximately 49,000 million metric tons of carbon dioxide equivalents ($MMTCO_2e$) in 2004, and greenhouse gas emissions in the United States (U.S.) were 7,074.4 $MMTCO_2e$. The EPA currently estimates U.S. emissions at 6,702 $MMTCO_2e$.

California is the second largest contributor of greenhouse gases in the U.S. and the sixteenth largest in the world. In 2011, California generated 448 $MMTCO_2e$, including imported electricity and excluding combustion of international fuels and carbon sinks or storage, which is just less than 7 percent of U.S. emissions for 2011.

According to the ARB's recent greenhouse gas inventory for the State, the single largest source of greenhouse gases in California is transportation, contributing 39 percent of the State's total greenhouse gas emissions in 2010. Industrial Sources is the second-largest source, contributing 22 percent of the State's greenhouse gas emissions in 2010. The inventory for California's greenhouse gas emissions between 2000 and 2010, by even years, is presented in Table 3.3-4.

Table 3.3-4: California Greenhouse Gas Inventory 2000–2010

Main Sector*	Emissions $MMTCO_2e$					
	2000	2002	2004	2006	2008	2010
Agriculture & Forestry	29.04	32.39	32.57	33.95	33.88	31.68
Commercial	15.74	16.21	16.84	18.01	19.92	21.46
Electricity Generation (Imports)	46.00	59.08	66.16	54.77	65.93	43.67
Electricity Generation (In State)	59.20	49.89	49.35	50.05	54.50	46.67
Industrial	102.60	101.43	103.11	99.72	97.65	100.20
Not Specified	0.36	0.23	0.21	0.22	0.23	0.22
Residential	31.58	30.68	31.31	30.43	31.03	31.86
Transportation	178.37	185.92	189.63	192.01	180.10	173.83
Total	462.90	475.82	489.18	479.18	483.22	449.59

Notes:
* Excludes military sector, aviation, and international marine bunker fuel.
Summation is based on non-rounded inventory numbers.
Source: California Air Resources Board, 2013b.

The BAAQMD has prepared a greenhouse gas emissions inventory for the Air Basin, as well as for each county, or portion of county, therein. The Greenhouse Gas Source Inventory estimates direct and indirect emissions for the base year of 2007 from sources within the BAAQMD's jurisdiction for the following gases: carbon dioxide, methane, nitrous oxides, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

The activity data reflects current industrial activity, motor vehicle travel, and economic and population growth. Most of the methodologies for calculating emissions remain the same as the prior

year 2002 inventory prepared by BAAQMD, with some exceptions as listed below. The Air Basin and Santa Clara County greenhouse gas inventories for 2007 are presented in Table 3.3-5.

- Emissions from electricity consumed in the Bay Area but generated outside the region is now included;
- Emissions for high global warming potential gases such as hydrofluorocarbons and perfluorocarbons used as refrigerants etc. are now included;
- More complete oil refiner process emissions are included;
- Certain off-road equipment such as construction and industrial is now reported separately;
- Ship emissions are now calculated for travel within 100 miles of California's coastline rather than 3 miles to be consistent with the BAAQMD's criteria pollutant inventory; and
- Biogenic CO_2 emissions are calculated but not included in the total CO_2 equivalent estimates for the region.

Table 3.3-5: Regional Greenhouse Gas Inventories

Main Sector*	San Francisco Bay Area Air Basin		Santa Clara County	
	Emissions $MMTCO_2e$	Percent of Inventory	Emissions $MMTCO_2e$	Percent of Inventory
Agriculture/Farming	1.1	1	0.2	1
Industrial/Commercial	34.9	36	4.7	25
Electricity/Co-Generation (Regional and Imported)	15.2	16	3.6	19
Off-Road Equipment	2.9	3	0.8	4
Residential Fuel Usage	6.8	7	1.6	9
Transportation	34.9	36	7.9	42
Total	**95.8**	**100**	**18.8**	**100**

Source: Bay Air Quality Management District, 2010.

The inventory found that the majority of greenhouse gas emissions in the Bay Area were generated by the transportation sector and industrial and commercial sector, with each contributing approximately 36 percent of the total emissions inventory. Santa Clara County emitted 18.8 million $MTCO_2e$ in 2007, which is 20 percent of the greenhouse gas emissions in the Air Basin.

The City of Morgan Hill completed an emissions inventory to calculate the community-wide carbon footprint for the year 2005. The City has since updated the inventory for a year 2010 baseline. The City's 2005 and 2010 greenhouse gas inventories are provided in Table 3.3-6 and Table 3.3-7,

respectively. The two inventories are not directly comparable, as the City refined and revised the sector and subsector categories for the 2010 baseline inventory. The tables show the majority of greenhouse gases emissions from the City of Morgan Hill were associated with transportation sector, followed by electricity and natural use (combined as 'Energy' in the 2010 inventory).

Table 3.3-6: Morgan Hill Greenhouse Gas Inventory by Community Sector 2005

Community Sector	Emissions $MTCO_2e$[1]	Percent of Inventory
Electricity	50,928	17 %
Natural Gas	47,932	16 %
Transportation	191,730	64 %
Waste	8,987	3 %
Total	**299,578**	**100 %**

Note:
[1] Emissions by sector are approximate and back-calculated, as only percentages and total carbon emissions were provided.
Source: City of Morgan Hill 2005

Table 3.3-7: Morgan Hill Greenhouse Gas Inventory by Community Sector 2010

Community Sector	Subsector	Emissions $MTCO_2e$[1]	Percent of Inventory
Energy[1]	*Residential*	*52,024*	*24.5 %*
	Commercial and Industrial	*41,611*	*19.6 %*
	Energy Subtotal	93,635	44.1%
Water	Water Conveyance and Wastewater	2,806	1.3 %
Waste	Solid Waste Generated	9,068	4.3 %
Transportation	On-Road Vehicles	90,493	42.7 %
	Off-Road Vehicles and Equipment	16,166	7.6 %
Total		**212,168**	**100.0 %**

Notes:
[1] Includes both electricity and natural gas emissions.
Source: City of Morgan Hill 2013.

Potential Environmental Effects

In California, climate change may result in consequences such as the following (from California Climate Change Center 2006 and Moser, et al. 2009).

- **A reduction in the quality and supply of water from the Sierra snowpack.** If heat-trapping emissions continue unabated, more precipitation will fall as rain instead of snow, and the snow that does fall will melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70

to 90 percent. This can lead to challenges in securing adequate water supplies. It can also lead to a potential reduction in hydropower.

- **Increased risk of large wildfires.** If rain increases as temperatures rise, wildfires in the grasslands and chaparral ecosystems of southern California are estimated to increase by approximately 30 percent toward the end of the 21st century because more winter rain will stimulate the growth of more plant "fuel" available to burn in the fall. In contrast, a hotter, drier climate could promote up to 90 percent more northern California fires by the end of the century by drying out and increasing the flammability of forest vegetation.
- **Reductions in the quality and quantity of certain agricultural products.** The crops and products likely to be adversely affected include wine grapes, fruit, nuts, and milk.
- **Exacerbation of air quality problems.** If temperatures rise to the medium warming range, there could be 75 to 85 percent more days with weather conducive to ozone formation in Los Angeles and the San Joaquin Valley, relative to today's conditions. This is more than twice the increase expected if rising temperatures remain in the lower warming range. This increase in air quality problems could result in an increase in asthma and other health-related problems.
- **A rise in sea levels resulting in the displacement of coastal businesses and residences.** During the past century, sea levels along California's coast have risen about seven inches. If emissions continue unabated and temperatures rise into the higher anticipated warming range, sea level is expected to rise an additional 22 to 35 inches by the end of the century. Elevations of this magnitude would inundate coastal areas with salt water, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats.
- **An increase in temperature and extreme weather events.** Climate change is expected to lead to increases in the frequency, intensity, and duration of extreme heat events and heat waves in California. More heat waves can exacerbate chronic disease or heat-related illness.
- **A decrease in the health and productivity of California's forests.** Climate change can cause an increase in wildfires, an enhanced insect population, and establishment of non-native species.

Inundation by Sea Level Rise

The Pacific Institute, with support from the California Energy Commission, California Department of Transportation, and the Ocean Protection Council, prepared impact maps showing the potential extent of coastal flooding and erosion under one scenario that involved a sea level rise of 1.4 meters (55 inches). This scenario represents the medium to high greenhouse gas emissions scenarios, but does not reflect the worst-case that could occur. The scenario estimates that the 1.4-meter sea-level rise would occur by 2100. The impact maps were prepared for and are available in the document, Impacts of Sea-Level Rise on the California Coast. The impact maps extend as far as the Walnut Creek area to the north and Hayward to the southwest.

3.3.3 - Regulatory Framework

Air pollutants are regulated at the national, state, and air basin level; each agency has a different level of regulatory responsibility. The United States Environmental Protection Agency (EPA) regulates at the national level, the California Air Resources Board (ARB) regulates at the State level, and the Bay Area Air Quality Management District (BAAQMD) regulates at the county level. This section describes the existing regulatory setting for the regional and local pollutants analyzed in this EIR.

National and State

The EPA is responsible for global, international, national, and interstate air pollution issues and policies. The EPA sets national vehicle and stationary source emission standards, oversees approval of all State Implementation Plans (SIP), provides research and guidance for air pollution programs, and sets National Ambient Air Quality Standards (NAAQS), also known as federal standards. There are NAAQS for six common air pollutants, called criteria air pollutants, which were identified from provisions of the Clean Air Act of 1970. The criteria pollutants are:

- Ozone
- Particulate matter (PM_{10} and $PM_{2.5}$)
- Nitrogen dioxide
- Carbon monoxide (CO)
- Lead
- Sulfur dioxide

The NAAQS were set to protect public health, including that of sensitive individuals; thus, the standards continue to change as more medical research is available regarding the health effects of the criteria pollutants. Primary NAAQS are the levels of air quality necessary, with an adequate margin of safety, to protect the public health.

The SIP for the State of California is administered by ARB, which has overall responsibility for statewide air quality maintenance and air pollution prevention. A SIP is prepared by each state describing existing air quality conditions and measures that will be followed to attain and maintain NAAQS. The SIP incorporates individual federal attainment plans for regional air districts. Federal attainment plans prepared by each air district are sent to ARB to be approved and incorporated into the California SIP. Federal attainment plans include the technical foundation for understanding air quality (e.g., emission inventories and air quality monitoring), control measures and strategies, and enforcement mechanisms.

ARB also administers California Ambient Air Quality Standards (CAAQS) for the ten air pollutants designated in the California Clean Air Act. The ten state air pollutants are the six criteria pollutants listed above as well as visibility-reducing particulates, hydrogen sulfide, sulfates, and vinyl chloride. The federal and State ambient air quality standards are summarized in Table 3.3-8.

Table 3.3-8: National and State Ambient Air Quality Standards

Air Pollutant	Averaging Time	California Standard	National Standard
Ozone	1-hour	0.09 ppm	—
	8-hour	0.070 ppm	0.075 ppm
Particulate matter (PM_{10})	24-hour	50 µg/m^3	150 µg/m^3
	Mean	20 µg/m^3	—
Particulate matter ($PM_{2.5}$)	24-hour	—	35 µg/m^3
	Mean	12 µg/m^3	12.0 µg/m^3
Carbon monoxide (CO)	1-hour	20 ppm	35 ppm
	8-hour	9.0 ppm	9 ppm
Nitrogen dioxide (NO_2)	1-hour	0.18 ppm	0.100 ppm
	Mean	0.030 ppm	0.053 ppm
Sulfur dioxide (SO_2)	1-hour	0.25 ppm	0.075 ppm
	24-hour	0.04 ppm	—
Lead	30-day	1.5 µg/m^3	—
	Quarter	—	1.5 µg/m^3
	Rolling 3-month average	—	0.15 µg/m^3
Hydrogen sulfide	1-hour	0.03 ppm	—
Sulfates	24-hour	25 µg/m^3	—
Vinyl chloride	24-hour	0.01 ppm	—

Notes:
1. The ARB has identified vinyl chloride as TAC with no threshold level of exposure for adverse health effects. Therefore, the vinyl chloride the standard is not a threshold but is the minimum detectable limit. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

Abbreviations:
ppm = parts per million (concentration) µg/m^3 = micrograms per cubic meter
Mean = Annual Arithmetic Mean 30-day = 30-day average Quarter = Calendar year quarter
Source: California Air Resources Board, 2013c.

Toxic Air Contaminant Regulations/Airborne Toxic Control Measures

The California legislature enacted the Toxic Air Contaminant Identification and Control Act (AB 1807; Tanner 1983) governing the release of TACs into the air. This law charges the ARB with the responsibility for identifying substances as TACs, setting priorities for control, adopting control strategies, and promoting alternative processes. The ARB has designated almost 200 compounds as TACs. AB 2588, the Air Toxics "Hot Spots" Program, was enacted in 1987, and requires stationary sources to report the types and quantities of certain substances routinely released into the air. The goals of the Air Toxics "Hot Spots" Act are to collect emission data, to identify facilities having localized impacts, to ascertain health risks, to notify nearby residents of significant risks, and to

reduce those significant risks to acceptable levels. Additionally, the ARB has implemented control strategies, called Airborne Toxic Control Measures, for a number of compounds that pose high health risk and show potential for effective control, including DPM and asbestos. ARB also prepares the California Toxics Inventory, and provides Risk Management Guidelines for new and modified sources of TACs. Detailed information can be found at the ARB's Air Toxics Program webpage at http://www.arb.ca.gov/toxics/toxics.htm.

- ARB Final Regulation Order, Asbestos Airborne Toxic Control Measures (ATCM) for Construction, Grading, Quarrying and Surface Mining Operations, road construction and maintenance activities, construction and grading operations, and quarrying and surface mining operations in areas where naturally occurring asbestos is likely to be found to employ the best available dust mitigation measures. The ATCM also requires that the local air pollution control or air quality management district be notified before any work in an area likely to contain naturally occurring asbestos begins. Construction projects that will disturb more than one acre must prepare and obtain district approval for an asbestos dust mitigation plan. The plan must specify how the operation will minimize emissions and must address specific emission sources (California Code of Regulations, Title 17, Section 93106).
- ARB Final Regulation Order, Requirements to Reduce Idling Emissions from New and In-Use Trucks, prohibits idling of more than 5 minutes for diesel-fueled on-road vehicles with gross vehicular weight ratings of greater than 10,000 pounds. The regulation also requires 2008 and subsequent model-year heavy-duty diesel engines be equipped with an engine shutdown system that automatically shuts down the engine after 5 minutes of continuous idling operation once the vehicle is stopped, the transmission is set to "neutral" or "park," and the parking brake is engaged. If the parking brake is not engaged, then the engine shutdown system shall shut down the engine after 900 seconds of continuous idling operation once the vehicle is stopped and the transmission is set to "neutral" or "park."

ARB Regulation for In-Use Off-Road Diesel Vehicles.

On July 26, 2007, the ARB adopted a regulation to reduce DPM and NO_x emissions from in-use (existing) off-road heavy-duty diesel vehicles in California. Such vehicles are used in construction, mining, and industrial operations. The regulation imposes limits on idling, buying older off-road diesel vehicles, and selling vehicles beginning in 2008; requires all vehicles to be reported to ARB and labeled in 2009; and begin ramping-up requirements in 2010 to clean up fleets by getting rid of older engines, using newer engines, and installing exhaust retrofits. The regulation requires equipment to be retrofitted or retired. The regulation takes effect in phases, requiring compliance by the largest fleets by 2010, medium fleets by 2013, and smaller fleets by 2015.

ARB's Land Use Handbook

The ARB adopted the Air Quality and Land Use Handbook: A Community Health Perspective (Land Use Handbook) in 2005. The Land Use Handbook provides information and guidance on siting

sensitive receptors in relation to sources of TACs. The sources of TACs identified in the Land Use Handbook are high-traffic freeways and roads, distribution centers, rail yards, ports, refineries, chrome plating facilities, dry cleaners, and large gas-dispensing facilities. If the project involves siting a sensitive receptor or source of TAC discussed in the Land Use Handbook, siting mitigation may be added to avoid potential land use conflicts, thereby reducing the potential for health impacts to the sensitive receptors.

Bay Area Air Quality Management District

The BAAQMD regulates air quality in the Air Basin. The BAAQMD is responsible for controlling and permitting industrial pollution sources (such as power plants, refineries, and manufacturing operations) and widespread, area wide sources (such as bakeries, dry cleaners, service stations, and commercial paint applicators), and for adopting local air quality plans and rules.

Attainment Status

Federal

EPA has identified nonattainment and attainment areas for each criteria air pollutant. Under amendments to the federal Clean Air Act, the EPA has designated air basins or portions thereof as "attainment," "nonattainment," or "unclassifiable," based on whether or not the national standards have been achieved. Nonattainment areas must take steps towards attainment by a specific timeline. The Clean Air Act uses additional classification systems for areas designated nonattainment based on the severity of the pollution and to set realistic deadlines for reaching clean-up goals. If an air basin is not in federal attainment (that is, it does not meet federal standards) for a particular pollutant, the air basin is classified as a marginal, moderate, serious, severe, or extreme nonattainment area, based on the estimated time it would take to reach attainment.

State

The state designation criteria specify four categories: nonattainment, nonattainment-transitional, attainment, and unclassified. A nonattainment designation indicates one or more violations of the state standard have occurred. A nonattainment-transitional designation is a subcategory of nonattainment that indicates improving air quality, with only occasional violations or exceedances of the state standard. In contrast, an attainment designation indicates no violations of the state standard are available to evaluate attainment status. Finally, an unclassified designation indicates either no air quality data or an incomplete set of air quality data.

In addition, since attainment status is on a per-pollutant basis, if any averaging time standard is violated for a single pollutant, the area is out of attainment for that pollutant, even if the other averaging times are being met.

The current attainment designations for the Air Basin, shown in Table 3.3-9, indicate that the Air Basin is in nonattainment for the state ozone, PM_{10}, and $PM_{2.5}$ standards. The Air Basin is also nonattainment for the federal ozone and $PM_{2.5}$ standards.

Table 3.3-9: Bay Area Air Basin Attainment Status

Pollutant	State Status	Federal Status
Ozone	Nonattainment	Nonattainment
Carbon monoxide	Attainment	Attainment
Nitrogen dioxide	Attainment	Attainment
Sulfur dioxide	Attainment	Attainment
PM_{10}	Nonattainment	Unclassified
$PM_{2.5}$	Nonattainment	Nonattainment
Lead	Attainment	Attainment
Sulfates	Attainment	No federal standards
Hydrogen sulfide	Unclassified	
Visibility-reducing particles	Unclassified	
Source: Bay Area Air Quality Management District, 2013.		

Current Air Quality Plans

As described above under federal and state regulatory agencies, a SIP is a federal requirement; each state prepares an SIP to describe existing air quality conditions and measures that will be followed to attain and maintain the NAAQS. In addition in California, state ozone standards have planning requirements. However, state PM_{10} standards have no attainment planning requirements, but air districts must demonstrate that all measures feasible for the area have been adopted.

Ozone Plans

Because the Air Basin is nonattainment for the federal and state ozone standards, the BAAQMD prepared an Ozone Attainment Demonstration Plan to satisfy the federal 1-hour ozone planning requirement and a Clean Air Plan to satisfy the state 1-hour ozone planning requirement.

On September 15, 2010, the BAAQMD adopted the final Bay Area 2010 Clean Air Plan (2010 CAP), and certified its Final EIR. The 2010 CAP was prepared by BAAQMD in cooperation with the Metropolitan Transportation Commission and the Association of Bay Area Governments. The Clean Air Plan identifies how the Air Basin will achieve compliance with the state 1-hour air quality standard for ozone as expeditiously as practicable and how the region will reduce transport of ozone and ozone precursors to neighboring air basins. The 2010 CAP serves to:

- 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 ozone.
- Provide a control strategy to reduce ozone, particulate matter (PM), air toxics, and greenhouse gases in a single, integrated plan.
- Review progress in improving air quality in recent years.

- Establish emission control measures to be adopted or implemented in the 2010 to 2012 timeframe.

Particulate Matter Plans

The Air Basin is designated nonattainment for the state PM_{10} and $PM_{2.5}$ standards, but it is currently in attainment for the federal PM_{10} standard. The EPA lowered the 24-hour $PM_{2.5}$ standard from 65 µg/m^3 to 35 µg/m^3 in 2006, and designated the Air Basin as nonattainment for the new $PM_{2.5}$ standard effective December 14, 2009.

Rules, Regulations and Programs

The BAAQMD establishes and administers a program of rules and regulations that are air plans, as described above, to attain and maintain state and national air quality standards. The rules and regulations that apply to this project include but are not limited to the following:

- **Regulation 2, Rule 2**. New Source Review. This rule requires any new source resulting in an increase of any criteria pollutant to be evaluated for adherence to Best Available Control Technology (BACT) control technologies. For compression internal combustion engines, BACT requires that the generator be fired on "California Diesel Fuel" (fuel oil with a sulfur content less than 0.05 percent by weight and less than 20 percent by volume of aromatic hydrocarbons).

  All stationary internal combustion engines larger than 50 horsepower must obtain a Permit to Operate. If the engine is diesel fueled, then it must also comply with the BAAQMD-administered Statewide Air Toxics Control Measure for Stationary Diesel Engines.

- **Regulation 2, Rule 5.** New Source Review of Toxic Air Contaminants. This rule applies to preconstruction review of new and modified sources of TACs, contains project health risk limits, and requires Toxics Best Available Control Technology.

- **Regulation 8, Rule 3.** Architectural Coatings. This rule governs the manufacture, distribution, and sale of architectural coatings and limits the ROG content in paints and paint solvents. Although this rule does not directly apply to the project, it does dictate the ROG content of paint available for use during the construction.

- **Regulation 8, Rule 15.** Emulsified and Liquid Asphalts. Although this rule does not directly apply to the project, it does dictate the ROG content of asphalt available for use during the construction through regulating the sale and use of asphalt and limits the ROG content in asphalt.

BAAQMD manages a naturally occurring asbestos program that administers the requirements of ARB's naturally occurring asbestos ATCM, as discussed above. The BAAMQD provides an exemption application, notification form for road construction and maintenance operations, and

asbestos dust mitigation plan applications for projects to submit prior to the start of construction, or upon discovery of asbestos, ultramafic rock, or serpentine during construction. Forms must be submitted to the BAAQMD in accordance with the procedures detailed in the BAAQMD Asbestos ATCM Inspection Guidelines Policies and Procedures.

Local

City of Morgan Hill

Local jurisdictions, such as the City of Morgan Hill, have the authority and responsibility to reduce air pollution through their police power and decision-making authority. Specifically, the City is responsible for the assessment and mitigation of air emissions resulting from its land use decisions. The City is also responsible for the implementation of transportation control measures as outlined in the air quality attainment plans.

General Plan

The City of Morgan Hill General Plan sets guidelines for city development and achievement of social, economic, and environmental goals. The General Plan does not include a separate air quality element, but it does contain the following goals, objectives, and policies related to, or affecting, air quality, many of which are incorporated from the policies of the South County Joint Area Plan (SCJAP):

Economic Development

- **ED Goal 1.** A strong, stable and diverse economic base
- **ED Policy 1k.** In considering which industries to promote, attention should be given to their impacts on economic development, jobs/housing balance, transportation, energy, public services, water and air quality, and natural and heritage resources. Specifically, recognize the strong interrelationship between industrial growth, jobs/housing balance and transportation systems capacity. (SCJAP 2.03)

Circulation

- **C Goal 1.** A balanced, safe and efficient circulation system for all segments of the community, meeting local needs and accommodating projected regional and sub-regional traffic while protecting neighborhoods
- **C Policy 1d.** Ensure compatibility of the transportation system with existing and proposed land uses, promoting environmental objectives such as safe and uncongested neighborhoods, a pedestrian-friendly vibrant downtown that emphasizes non-auto transportation modes, energy conservation, reduction of air and noise pollution, and the integrity of scenic and/or hillside areas. (SCJAP 11.02)
- **C Goal 6.** A safe and efficient transit system that reduces congestion by providing viable non-automotive modes of transportation

- **C Policy 6l.** Investigate opportunities for preparing and implementing Air Quality and Transportation Demand Management Plans by employers and developers of new residential and non-residential developments.

Open Space and Conservation

- **OSC Policy 7m.** Reduce greenhouse gas emissions caused by actions within the City of Morgan Hill.
- **OSC Action 7.10.** Prepare and implement a Climate Action Plan (CAP) by the year 2015 that will reduce greenhouse gas emissions within the City of Morgan Hill by 2020 consistent with the direction of the State of California, as outlined in Assembly Bill 32: Global Warming Solutions Act.

County of Santa Clara

General Plan

The Santa Clara County General Plan establishes the following policies related to air quality:

Countywide Policies

- **Policy C-HS 1.** Ambient air quality for Santa Clara County should comply with standards set by state and federal law.
- **Policy C-HS 2.** The strategies for maintaining and improving air quality on a countywide basis, in addition to ongoing stationary source regulation, should include:
    a. Augmented growth management, land use, and development policies that help achieve air quality standards;
    b. Transit systems that provide feasible travel options;
    c. Increased travel demand management and traffic congestion relief; and
    d. Particulate and small scale emission controls
- **Policy C-HS 3.** Countywide or multi-jurisdictional planning by the cities and County should promote efforts to improve air quality and maximize the effectiveness of implementation efforts. Guidance and assistance from the BAAQMD shall be sought in the preparation of coordinated, multi-jurisdictional plans as well as in environmental review of projects that have potential for regionally-significant air quality impacts.
- **Policy C-HS 4.** Future growth and development countywide should be managed and accommodated in such a way that it:
    a. Minimizes the cumulative impacts on local, regional, and trans-regional air quality; and
    b. Reduces the general population exposure to levels prescribed by state and/or federal law for urban areas designated as non-attainment areas.
- **Policy C-HS 5.** Countywide growth management strategies and urban development policies should promote the air quality improvement by minimizing the expansion of auto-dependent development and encouraging balanced urban development.

- **Policy C-HS 6.** Cities' land use plans and development policies should incorporate to the maximum extent possible concepts which contribute to improved air quality:
    a. compact development and infill policies;
    b. minimum densities along transit corridors;
    c. Transit-Oriented Design and mixed use development nodes near transit stations;
    d. employment area densities and design to facilitate transit service;
    e. mitigation requirements for "indirect" sources, such as arenas, major shopping centers, and other facilities which generate large trip volumes
    f. redesignation of non-residential lands to improve supply and proximity of housing to employment; and
    g. buffer areas to adequately separate "sensitive populations" and residential development from major emissions sources.
- **Policy C-HS 7.** The local and sub-regional improvements in transit service and the highway system which promote transit use, reduce congestion, improve flows, and otherwise contribute to improved air quality should be considered for highest funding priorities.
- **Policy C-HS 8.** Employer-based measures for transportation demand management (TDM) should be instituted to the maximum extent possible for large employers in both public and private sectors to encourage ridesharing and increase average vehicle occupancy rates, reduce peak hour congestion, and facilitate use of transit.
- **Policy C-HS 9.** Employer-based ridesharing and TDM should be encouraged as mitigation for traffic generating impacts of new development.
- **Policy C-HS 10.** Congestion on major roadways due to traffic accidents, unregulated entry (on ramps), and other system-related causes should be reduced to improve traffic flow and air quality.
- **Policy C-HS 11.** During critical winter inversion periods, pollution from wood-burning stoves and fireplaces should be reduced by measures which restrict use according to meteorological conditions projected by the BAAQMD or require installation of emission controls such as catalytic converters in chimneys.
- **Policy C-HS 12.** Measures to reduce particulate matter pollution originating from quarrying, road and building construction, industrial processes, unpaved parking lots, and other sources should be encouraged.
- **Policy C-HS 13.** Emissions from small scale sources such as gasoline-powered lawn equipment, consumer products, barbeque grills, and other sources should be reduced through public education, product replacement, and regulation where appropriate.

Greenhouse Gases

International

Climate change is a global issue; therefore, many countries around the world have made an effort to reduce greenhouse gases.

Intergovernmental Panel on Climate Change. In 1988, the United Nations and the World Meteorological Organization established the Intergovernmental Panel on Climate Change to assess the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts, and options for adaptation and mitigation.

United Nations. On March 21, 1994, the United States joined a number of countries around the world in signing the United Nations Framework Convention on Climate Change. Under the Convention, governments gather and share information on greenhouse gas emissions, national policies, and best practices; launch national strategies for addressing greenhouse gas emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries; and cooperate in preparing for adaptation to the impacts of climate change.

Kyoto Protocol. A particularly notable result of the United Nations Framework Convention on Climate Change efforts is a treaty known as the Kyoto Protocol, which went into effect on February 16, 2005. When countries sign the Kyoto Protocol, they demonstrate their commitment to reduce their emissions of greenhouse gases or engage in emissions trading. More than 170 countries are currently participating in the Kyoto Protocol. Industrialized countries are required to reduce their greenhouse gas emissions by an average of 5 percent below their 1990 levels by 2012. In 1998, United States Vice President Al Gore symbolically signed the Protocol; however, in order for the Kyoto Protocol to be formally ratified, the United States Senate must approve it. The Senate has never held a vote to ratify it. Recently, Canada, Japan, and Russia withdrew from the Kyoto Protocol, effectively ending the viability of this global agreement.

National

Greenhouse Gas Endangerment. *Massachusetts v. EPA* (Supreme Court Case 05-1120) was argued before the United States Supreme Court on November 29, 2006, in which it was petitioned that the EPA regulate four greenhouse gases, including carbon dioxide, under Section 202(a)(1) of the Clean Air Act. A decision was made on April 2, 2007, in which the Supreme Court found that greenhouse gases are air pollutants covered by the Clean Air Act. The Court held that the Administrator must determine whether emissions of greenhouse gases from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. On December 7, 2009, the EPA Administrator signed two distinct findings regarding greenhouse gases under Section 202(a) of the Clean Air Act:

- Endangerment Finding: The Administrator finds that the current and projected concentrations of the six key well-mixed greenhouse gases—carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride—in the atmosphere threaten the public health and welfare of current and future generations.

- Cause or Contribute Finding: The Administrator finds that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution, which threatens public health and welfare.

Clean Vehicles. Congress first passed the Corporate Average Fuel Economy law in 1975 to increase the fuel economy of cars and light duty trucks. The law has become more stringent over time. On May 19, 2009, President Obama put in motion a new national policy to increase fuel economy for all new cars and trucks sold in the United States. On April 1, 2010, the EPA and the Department of Transportation's National Highway Safety Administration announced a joint final rule establishing a national program that would reduce greenhouse gas emissions and improve fuel economy for new cars and trucks sold in the United States.

The first phase of the national program would apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. They require these vehicles to meet an estimated combined average emissions level of 250 grams of carbon dioxide per mile, equivalent to 35.5 miles per gallon if the automobile industry were to meet this carbon dioxide level solely through fuel economy improvements. Together, these standards would cut carbon dioxide emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012-2016). The EPA and the National Highway Safety Administration are working on a second-phase joint rulemaking to establish national standards for light-duty vehicles for model years 2017 and beyond.

On October 25, 2010, the EPA and the U.S. Department of Transportation proposed the first national standards to reduce greenhouse gas emissions and improve fuel efficiency of *heavy-duty trucks and buses*. For combination tractors, the agencies are proposing engine and vehicle standards that begin in the 2014 model year and achieve up to a 20 percent reduction in carbon dioxide emissions and fuel consumption by the 2018 model year. For heavy-duty pickup trucks and vans, the agencies are proposing separate gasoline and diesel truck standards, which phase in starting in the 2014 model year and achieve up to a 10 percent reduction for gasoline vehicles and 15 percent reduction for diesel vehicles by 2018 model year (12 and 17 percent respectively if accounting for air conditioning leakage). Lastly, for vocational vehicles, the agencies are proposing engine and vehicle standards starting in the 2014 model year, which would achieve up to a 10-percent reduction in fuel consumption and carbon dioxide emissions by 2018 model year.

Mandatory Reporting of Greenhouse Gases. The Consolidated Appropriations Act of 2008, passed in December 2007, requires the establishment of mandatory greenhouse gas reporting requirements. On September 22, 2009, the EPA issued the Final Mandatory Reporting of Greenhouse Gases Rule. The rule requires reporting of greenhouse gas emissions from large sources and suppliers in the United States, and is intended to collect accurate and timely emissions data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial greenhouse gases,

manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of greenhouse gas emissions are required to submit annual reports to the EPA.

New Source Review. The EPA issued a final rule on May 13, 2010 that establishes thresholds for greenhouse gases that define when permits under the New Source Review Prevention of Significant Deterioration and Title V Operating Permit programs are required for new and existing industrial facilities. This final rule "tailors" the requirements of these Clean Air Act permitting programs to limit which facilities will be required to obtain Prevention of Significant Deterioration and Title V permits. In the preamble to the revisions to the federal code of regulations, EPA states:

> This rulemaking is necessary because without it the Prevention of Significant Deterioration and Title V requirements would apply, as of January 2, 2011, at the 100 or 250 tons per year levels provided under the Clean Air Act, greatly increasing the number of required permits, imposing undue costs on small sources, overwhelming the resources of permitting authorities, and severely impairing the functioning of the programs. EPA is relieving these resource burdens by phasing in the applicability of these programs to greenhouse gas sources, starting with the largest greenhouse gas emitters. This rule establishes two initial steps of the phase-in. The rule also commits the agency to take certain actions on future steps addressing smaller sources, but excludes certain smaller sources from Prevention of Significant Deterioration and Title V permitting for greenhouse gas emissions until at least April 30, 2016.

EPA estimates that facilities responsible for nearly 70 percent of the national greenhouse gas emissions from stationary sources will be subject to permitting requirements under this rule. This includes the nation's largest greenhouse gas emitters—power plants, refineries, and cement production facilities.

State

Title 24. Although not originally intended to reduce greenhouse gases, California Code of Regulations Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The Title 24 standards are updated on an approximately 3-year cycle to allow consideration and possible incorporation of new energy efficient technologies and methods. All buildings for which an application for a building permit is submitted on or after January 1, 2014 must follow the new 2013 Standards. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases greenhouse gas emissions. The 2013 Standards are 25 percent more efficient than 2008 Standards for residential construction and 30 percent more efficient for non-residential construction.

California Green Building Standards. On January 12, 2010, the State Building Standards Commission unanimously adopted updates to the California Green Building Standards Code, which went into effect on January 1, 2011. The Code is a comprehensive and uniform regulatory code for all residential, commercial and school buildings. The Code is a sub-component of Title 24. The 2013 Title 24 Standards included updates to the Green Building Standards.

The California Green Building Standards Code does not prevent a local jurisdiction from adopting a more stringent code as state law provides methods for local enhancements. The Code recognizes that many jurisdictions have developed existing construction and demolition ordinances, and defers to them as the ruling guidance provided they provide a minimum 50-percent diversion requirement. The Code also provides exemptions for areas not served by construction and demolition recycling infrastructure. State building codes provide the minimum standards that buildings need to meet in order to be certified for occupancy. Enforcement is generally through the local building official.

The California Green Building Standards Code (code section in parentheses) requires:

- **Short-term bicycle parking.** If a commercial project is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5 percent of visitor motorized vehicle parking capacity, with a minimum of one two-bike capacity rack (5.106.4.1).
- **Long-term bicycle parking.** For buildings with over 10 Tenant-occupants, provide secure bicycle parking for 5 percent of Tenant-occupied motorized vehicle parking capacity, with a minimum of one space (5.106.4.2).
- **Designated parking.** Provide designated parking in commercial projects for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles as shown in Table 5.106.6.2 (5.106.5.2).
- **Recycling by occupants.** Provide readily accessible areas that serve the entire building and are identified for the depositing, storage and collection of nonhazardous materials for recycling.
- **Construction waste.** A minimum 50-percent diversion of construction and demolition waste from landfills, increasing voluntarily to 65 and-75 percent for new homes and 80-percent for commercial projects. All (100 percent) of trees, stumps, rocks and associated vegetation and soils resulting from land clearing shall be reused or recycled.
- **Wastewater reduction.** Each building shall reduce the generation of wastewater by one of the following methods:
    1. The installation of water-conserving fixtures or
    2. Utilizing nonpotable water systems (5.303.4).

- **Water use savings.** 20-percent mandatory reduction in indoor water use with voluntary goal standards for 30, 35, and 40-percent reductions.
- **Water meters.** Separate water meters for buildings in excess of 50,000 square feet or buildings projected to consume more than 1,000 gallons per day.
- **Irrigation efficiency.** Moisture-sensing irrigation systems for larger landscaped areas.
- **Materials pollution control.** Low-pollutant emitting interior finish materials such as paints, carpet, vinyl flooring, and particle board.
- **Building commissioning.** Mandatory inspections of energy systems (i.e. heat furnace, air conditioner, mechanical equipment) for nonresidential buildings over 10,000 square feet to ensure that all are working at their maximum capacity according to their design efficiencies.

Pavley Regulations. California AB 1493, enacted on July 22, 2002, required the ARB to develop and adopt regulations that reduce greenhouse gases emitted by passenger vehicles and light duty trucks. The regulation was stalled by automaker lawsuits and by the EPA's denial of an implementation waiver. On January 21, 2009, the ARB requested that the EPA reconsider its previous waiver denial. On January 26, 2009, President Obama directed that the EPA assess whether the denial of the waiver was appropriate. On June 30, 2009, the EPA granted the waiver request.

The standards phase in during the 2009 through 2016 model years. When fully phased in, the near term (2009-2012) standards will result in about a 22-percent reduction compared with the 2002 fleet, and the mid-term (2013-2016) standards will result in about a 30-percent reduction. Several technologies stand out as providing significant reductions in emissions at favorable costs. These include discrete variable valve lift or camless valve actuation to optimize valve operation rather than relying on fixed valve timing and lift as has historically been done; turbocharging to boost power and allow for engine downsizing; improved multi-speed transmissions; and improved air conditioning systems that operate optimally, leak less, and/or use an alternative refrigerant.

Executive Order S-3-05. California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S-3-05, the following reduction targets for greenhouse gas emissions:

- By 2010, reduce greenhouse gas emissions to 2000 levels.
- By 2020, reduce greenhouse gas emissions to 1990 levels.
- By 2050, reduce greenhouse gas emissions to 80 percent below 1990 levels.

The 2050 reduction goal represents what scientists believe is necessary to reach levels that will stabilize the climate. The 2020 goal was established to be an aggressive, but achievable, mid-term target. The Climate Action Team's Report to the Governor in 2006 contains recommendations and strategies to help ensure the 2020 targets in Executive Order S-3-05 are met.

Low Carbon Fuel Standard – Executive Order S-01-07. The Governor signed Executive Order S-01-07 on January 18, 2007. The order mandates that a statewide goal shall be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. In particular, the executive order established a Low Carbon Fuel Standard and directed the Secretary for Environmental Protection to coordinate the actions of the California Energy Commission, the ARB, the University of California, and other agencies to develop and propose protocols for measuring the "life-cycle carbon intensity" of transportation fuels. This analysis supporting development of the protocols was included in the State Implementation Plan for alternative fuels (State Alternative Fuels Plan adopted by California Energy Commission on December 24, 2007) and was submitted to ARB for consideration as an "early action" item under AB 32. The ARB adopted the Low Carbon Fuel Standard on April 23, 2009.

SB 97 and the CEQA Guidelines Update. Passed in August 2007, SB 97 added Section 21083.05 to the Public Resources Code. The code states "(a) On or before July 1, 2009, the Office of Planning and Research shall prepare, develop, and transmit to the Resources Agency guidelines for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions as required by this division, including, but not limited to, effects associated with transportation or energy consumption. (b) On or before January 1, 2010, the Resources Agency shall certify and adopt guidelines prepared and developed by the Office of Planning and Research pursuant to subdivision (a)." Section 21097 was also added to the Public Resources Code. It provided CEQA protection until January 1, 2010 for transportation projects funded by the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006 or projects funded by the Disaster Preparedness and Flood Prevention Bond Act of 2006, in stating that the failure to adequately analyze the effects of greenhouse gases would not violate CEQA.

On April 13, 2009, the Office of Planning and Research submitted to the Secretary for Natural Resources its recommended amendments to the CEQA Guidelines for addressing greenhouse gas emissions. On July 3, 2009, the Natural Resources Agency commenced the Administrative Procedure Act rulemaking process for certifying and adopting these amendments pursuant to Public Resources Code section 21083.05. Following a 55-day public comment period and two public hearings, the Natural Resources Agency proposed revisions to the text of the proposed Guidelines amendments. The Natural Resources Agency transmitted the adopted amendments and the entire rulemaking file to the Office of Administrative Law on December 31, 2009. On February 16, 2010, the Office of Administrative Law approved the Amendments, and filed them with the Secretary of State for inclusion in the California Code of Regulations. The Amendments became effective on March 18, 2010.

The CEQA Amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of greenhouse gas emissions in CEQA documents. The CEQA Amendments fit within the existing CEQA framework by amending existing CEQA Guidelines to reference climate change.

A new section, CEQA Guidelines Section 15064.4, was added to assist agencies in determining the significance of greenhouse gas emissions. The new section allows agencies the discretion to determine whether a quantitative or qualitative analysis is best for a particular project. However, little guidance is offered on the crucial next step in this assessment process—how to determine whether the project's estimated greenhouse gas emissions are significant or cumulatively considerable.

Also amended were CEQA Guidelines Sections 15126.4 and 15130, which address mitigation measures and cumulative impacts respectively. Greenhouse gas mitigation measures are referenced in general terms, but no specific measures are championed. The revision to the cumulative impact discussion requirement (Section 15130) simply directs agencies to analyze greenhouse gas emissions in an EIR when a project's incremental contribution of emissions may be cumulatively considerable, however it does not answer the question of when emissions are cumulatively considerable.

Section 15183.5 permits programmatic greenhouse gas analysis and later project-specific tiering, as well as the preparation of Greenhouse Gas Reduction Plans. Compliance with such plans can support a determination that a project's cumulative effect is not cumulatively considerable, according to proposed Section 15183.5(b).

In addition, the amendments revised Appendix F of the CEQA Guidelines, which focuses on Energy Conservation. The sample environmental checklist in Appendix G was amended to include greenhouse gas questions.

AB 32. The California State Legislature enacted AB 32, the California Global Warming Solutions Act of 2006. AB 32 requires that greenhouse gases emitted in California be reduced to 1990 levels by the year 2020. "Greenhouse gases" as defined under AB 32 include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. ARB is the state agency charged with monitoring and regulating sources of greenhouse gases. AB 32 states the following:

> Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems.

The ARB Board approved the 1990 greenhouse gas emissions inventory of 427MMTCO$_2$e on December 6, 2007. Therefore, emissions generated in California in 2020 are required to be equal to or less than 427 MMTCO$_2$e. In 2008, the emissions in 2020 in a "business as usual" scenario were estimated to be 596 MMTCO$_2$e. In 2012, ARB updated the 2020 business as usual scenario based on new and revised data. The updated forecast accounts for the effects of the recent economic recession,

new estimates for future fuel and energy demand, and other factors. The current year 2020 business as usual forecast is 545 $MMTCO_2e$. Therefore, a 21.7-percent reduction from the year 2020 business as usual forecast is required to achieve the year 1990 emissions target.

Under AB 32, the ARB published its Final Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California. Discrete early action measures are currently underway or are enforceable by January 1, 2010. The ARB has 44 early action measures that apply to the transportation, commercial, forestry, agriculture, cement, oil and gas, fire suppression, fuels, education, energy efficiency, electricity, and waste sectors. Of these early action measures, nine are considered discrete early action measures, as they are regulatory and enforceable by January 1, 2010. The ARB estimates that the 44 recommendations are expected to result in reductions of at least 42 $MMTCO_2e$ by 2020, representing approximately 25 percent of the 2020 target.

The ARB's Climate Change Scoping Plan (Scoping Plan) contains measures designed to reduce the State's emissions to 1990 levels by the year 2020. The Scoping Plan identifies recommended measures for multiple greenhouse gas emission sectors and the associated emission reductions needed to achieve the year 2020 emissions target—each sector has a different emission reduction target. Most of the measures target the transportation and electricity sectors. As stated in the Scoping Plan, the key elements of the strategy for achieving the 2020 greenhouse gas target include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a statewide renewables energy mix of 33 percent;
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establishing targets for transportation-related greenhouse gas emissions for regions throughout California and pursuing policies and incentives to achieve those targets;
- Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State's long-term commitment to AB 32 implementation.

In addition, the Scoping Plan differentiates between "capped" and "uncapped" strategies. "Capped" strategies are subject to the proposed cap-and-trade program. The Scoping Plan states that the inclusion of these emissions within the cap-and trade program will help ensure that the year 2020 emission targets are met despite some degree of uncertainty in the emission reduction estimates for

any individual measure. Implementation of the capped strategies is calculated to achieve a sufficient amount of reductions by 2020 to achieve the emission target contained in AB 32. "Uncapped" strategies that will not be subject to the cap-and-trade emissions caps and requirements are provided as a margin of safety by accounting for additional greenhouse gas emission reductions.[1]

In August 2011, the AB 32 Scoping Plan was re-approved by ARB, with the inclusion of the Final Supplement to the Scoping Plan Functional Equivalent Document. This re-approved plan contains revisions to greenhouse gas reduction estimates and plans.

SB 375. Passing the Senate on August 30, 2008, SB 375 was signed by the Governor on September 30, 2008. According to SB 375, the transportation sector is the largest contributor of greenhouse gas emissions, which emits over 40 percent of the total greenhouse gas emissions in California. SB 375 states, "Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." SB 375 does the following: (1) requires metropolitan planning organizations to include sustainable community strategies in their regional transportation plans for reducing greenhouse gas emissions, (2) aligns planning for transportation and housing, and (3) creates specified incentives for the implementation of the strategies. Concerning CEQA, SB 375, Section 21159.28 states that CEQA findings determinations for certain projects are not required to reference, describe, or discuss (1) growth inducing impacts or (2) any project-specific or cumulative impacts from cars and light-duty truck trips generated by the project on global warming or the regional transportation network if the project:

1. Is in an area with an approved sustainable communities strategy or an alternative planning strategy that the ARB accepts as achieving the greenhouse gas emission reduction targets.
2. Is consistent with that strategy (in designation, density, building intensity, and applicable policies).
3. Incorporates the mitigation measures required by an applicable prior environmental document.

Executive Order S-13-08. Executive Order S-13-08 indicates that "climate change in California during the next century is expected to shift precipitation patterns, accelerate sea level rise and increase temperatures, thereby posing a serious threat to California's economy, to the health and welfare of its population and to its natural resources." Pursuant to the requirements in the order, the

[1] On March 17, 2011, the San Francisco Superior Court issued a final decision in *Association of Irritated Residents v. California Air Resources Board* (Case No. CPF-09-509562). While the Court upheld the validity of the ARB Scoping Plan for the implementation of AB 32, the Court enjoined ARB from further rulemaking under AB 32 until ARB amends its CEQA environmental review of the Scoping Plan to address the flaws identified by the Court. On May 23, 2011, ARB filed an appeal. On June 24, 2011, the Court of Appeal granted ARB's petition staying the trial court's order pending consideration of the appeal. In the interest of informed decision-making, on June 13, 2011, ARB released the expanded alternatives analysis in a draft Supplement to the AB 32 Scoping Plan Functional Equivalent Document. The ARB Board approved the Scoping Plan and the CEQA document on August 24, 2011.

2009 California Climate Adaptation Strategy was adopted, which is the " . . . first statewide, multi-sector, region-specific, and information-based climate change adaptation strategy in the United States." Objectives include analyzing risks of climate change in California, identifying and exploring strategies to adapt to climate change, and specifying a direction for future research.

Renewable Electricity Standards. On September 12, 2002, Governor Gray Davis signed SB 1078 requiring California to generate 20 percent of its electricity from renewable energy by 2017. SB 107 changed the due date to 2010 instead of 2017. On November 17, 2008, Governor Arnold Schwarzenegger signed Executive Order S-14-08, which established a Renewable Portfolio Standard target for California requiring that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020. Governor Schwarzenegger also directed the ARB (Executive Order S-21-09) to adopt a regulation by July 31, 2010, requiring the state's load serving entities to meet a 33 percent renewable energy target by 2020. The ARB Board approved the Renewable Electricity Standard on September 23, 2010 by Resolution 10-23.

Bay Area Air Quality Management District

The BAAQMD has established a Climate Action Program in 2005 to integrate climate protection activities into existing BAAQMD programs. As part of this program, the BAAQMD developed the Climate Action Web Portal for local governments to access tools and resources for climate change activities, including best practices, case studies, and news and events from local governments. In addition, the BAAQMD prepared a greenhouse gas emissions inventory for the area under its jurisdiction, along with a county-level breakdown of greenhouse gas emissions in the basin.

In 2008, the BAAQMD approved a fee on stationary air pollution sources in its jurisdiction to help defray the costs associated with the BAAQMD's climate protection activities and programs, including environmental review, air pollution regulations, and emissions inventory development. Industrial facilities and businesses that are currently required to submit an air quality permit to operate will have a fee of 4.4 cents per metric ton of greenhouse gas emissions added to their permit bill.

In addition, the BAAQMD updated its California Environmental Quality Act Air Quality Guidelines in 2010 to include both numeric and qualitative greenhouse gas thresholds and recommended assessment methodologies for project- and plan-level analyses. However, an Alameda Superior Court ruled in January 2012 in *California Building Industry Association v. Bay Area Air Quality Management District*, that the BAAQMD had violated CEQA by adopting thresholds without appropriate CEQA review and documentation. The Court ruled that the new thresholds (including new thresholds for TACs and $PM_{2.5}$) are considered a "project" under CEQA, and thus the BAAQMD should have prepared the required CEQA review and documentation. This ruling does not prohibit the application of the BAAQMD's recommended thresholds but requires BAAQMD to undertake due CEQA review of the thresholds.

Local

City of Morgan Hill

The City of Morgan Hill has adopted a comprehensive Environmental Agenda to enhance the long-term sustainability of Morgan Hill by developing a framework for reducing environmental impacts, increasing community health, and protecting the community's environmental resources. The following Environmental Agenda goals are related to climate change:

- Limit impacts of human caused climate change by reducing community's greenhouse gas emissions.
- Protect climate and conserve energy by decreasing gasoline consumption to indicate increases in fuel efficiency or community driving behavior changes.
- Reduce air pollutants and protect climate by increasing ridership on public transit.
- Reduce air pollutants and protect climate by increasing ridership on Caltrains.
- Protect climate and community health by providing more infrastructure for bicycling.
- Protect climate and increase community health by increasing community participation in Bike To Work Day.
- Protect climate through increased business participation in 511.org.
- Protect climate through increased community participation in 511.org.
- Protect climate and decrease air pollutants through increased tree canopy.
- Protect climate by increasing the number of renewable energy installations.
- Conserve energy, preserve resources, and protect climate by building more sustainably.
- Lead the community to protect climate by reducing organizations' greenhouse gas emissions.
- Increase fuel efficiency of city-owned fleet to protect climate and conserve energy.
- Upward trend to protect climate, air quality, and community health.

The City of Morgan Hill amended its General Plan to add a policy to reduce greenhouse gas emissions caused by actions within the City and an action statement to prepare and implement a CAP by the year 2015 . The City completed a 2005 community emissions inventory for greenhouse gases but has not finalized a Climate Action Plan. To be considered as a "Qualified" plan, the plan would need to meet the criteria put forth by the 2010-adopted California Environmental Quality Act Air Quality Guidelines.

3.3.4 - Methodology

The project's air quality impacts were evaluated in accordance with the guidance set forth by the BAAQMD's 2011 CEQA Air Quality Guidelines. The purpose of the Air Quality Guidelines is to assist lead agencies in evaluating air quality impacts of projects and plans proposed in the Air Basin. The Air Quality Guidelines contain guidance on how to conduct plan-level analysis, as well as how to determine the significance of a project's emissions of greenhouse gases. This analysis follows the guidance in the Air Quality Guidelines where appropriate.

3.3.5 - Thresholds of Significance

According to Appendix G, Environmental Checklist, of the CEQA Guidelines, air quality and greenhouse gas emissions impacts resulting from the implementation of the proposed project would be considered significant if the project would:

> Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations.
>
> Would the project:
>
> a.) Conflict with or obstruct implementation of the applicable air quality plan?
>
> b.) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?
>
> c.) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)?
>
> d.) Expose sensitive receptors to substantial pollutant concentrations?
>
> e.) Create objectionable odors affecting a substantial number of people?
>
> f.) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
>
> g.) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?

According to Appendix G, Environmental Checklist, of the CEQA Guidelines, greenhouse gas emissions impacts resulting from the implementation of the proposed project would be considered significant if the project would:

a.) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

b.) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

3.3.6 - Project Impacts and Mitigation Measures

This section discusses potential impacts associated with the development of the project and provides mitigation measures where appropriate.

Air Quality Plan

Impact AIR-1:	**The project may conflict with or obstruct implementation of the applicable air quality plan.**

Impact Analysis

The BAAQMD 2010 CAP is the regional air quality management plan for the Air Basin. The 2010 CAP accounts for projections of population growth provided by Association of Bay Area Governments and vehicle miles traveled provided by the Metropolitan Transportation Commission, and it identifies strategies to bring regional emissions into compliance with federal and state air quality standards.

BAAQMD's guidance differentiates between "project-level" and "plan-level" thresholds of significance and impact assessment methodologies. BAAQMD's use of "plan-level" is the same as the term "program" within CEQA. For consistency with BAAQMD's terminology, the term plan-level is used throughout this impact analysis.

BAAQMD's Guidance provides two impact areas for determining if a plan-level project is consistent with the current air quality plan (AQP) control measures. The two areas (and associated criteria) are:

- Consistency with current air quality plan control measures:
    1) Does the project support the primary goals of the AQP? (Criterion 1)
    2) Does the project include applicable control measures from the AQP? (Criterion 2)
    3) Does the project disrupt or hinder implementation of any AQP control measures? (Criterion 3)

and

- Projected vehicle miles traveled (VMT) or vehicle trips increase is less than or equal to projected population increase. (Criterion 4)

The BAAQMD does not provide a threshold of significance for project-level consistency analysis. Therefore, the following impact area and associated criteria will be used for determining the High School site's project-level consistency with the AQP:

- Consistency with current air quality plan control measures:
    1) Does the project support the primary goals of the AQP? (Criterion 1)
    2) Does the project include applicable control measures from the AQP? (Criterion 2)
    3) Does the project disrupt or hinder implementation of any AQP control measures? (Criterion 3)

SEQ Area (Program Level)

Criterion 1

The primary goals of the 2010 CAP, the current AQP to date, are to:

- Attain air quality standards;
- Reduce population exposure to unhealthy air and protecting public health in the Bay area; and
- Reduce greenhouse gas emissions and protect the climate.

As discussed in Impacts AIR-2, AIR-4, and AIR-5, the SEQ Area plan would not create a localized violation of state or federal air quality standards, expose sensitive receptors to substantial pollutant concentrations, or create objectionable odors affecting a substantial number of people after incorporation of mitigation measures. Impact AIR-6, related to greenhouse gas and climate change impacts, shows that the project would not generate a significant amount of greenhouse gases and would not conflict with the applicable plans adopted for reducing the emission of greenhouse gases.

However, because the SEQ Area plan exceeds the threshold of significance for regional pollution impacts, as discussed in Impact AIR-3, the project would not meet this criterion, and would not meet the primary goals of the 2010 Clean Air Plan.

Criterion 2

The 2010 CAP contains 55 control measures aimed at reducing air pollution in the Bay Area. Along with the traditional stationary, area, mobile source, and transportation control measures, the 2010 CAP contains a number of new control measures designed to protect the climate and promote mixed use, compact development to reduce vehicle emissions and exposure to pollutants from stationary and mobile sources.

The SEQ Area includes four programmatic land use projects and several city-initiated General Plan Amendments. No detailed land use plans are available at the time of this writing, nor is there a schedule for submittal of any detailed plans. Because of the programmatic nature of the SEQ Area, evaluating consistency with air quality plan control measures would be premature. Future development activities that occur within the SEQ Area would be subject to project-level environmental review, including air quality plan control measures. Therefore, the project is anticipated to be consistent with this criterion.

Criterion 3

The SEQ Area plan will not preclude extension of a transit line or bike path, propose excessive parking beyond parking requirements, or otherwise create an impediment or disruption to implementation of any AQP control measures.

Criterion 4

The final criterion for consistency with the 2010 CAP is to determine if the projected vehicle miles traveled or vehicle trips increase for the SEQ Area is less than or equal to the project population increase. Existing population and annual VMT estimates for the SEQ Area were calculated through a hand count of residences and the application of population, trip generation, and trip length default assumptions in CalEEMod. Projected population and VMT increases in the SEQ Area General Plan Amendments were calculated using the same method, with VMT calculations utilizing the detailed daily trip generation contained in the traffic impact analysis report. The results of these analyses are presented in Table 3.3-10.

Table 3.3-10: SEQ Area Development

Parameter	Existing	Proposed Plan	Increase Due to Project	Percent Increase
Annual Vehicle Miles Traveled	3,658,657	53,907,460	50,248,803	1,373
Dwelling Units	172 DU	215 DU	43 DU	25
Population	535 persons	669persons	134 persons	25

Notes:
A count of existing residences was conducted using existing mapping. Existing VMT estimates from the hand count of residences and CalEEMod default trip generation per dwelling unit, and miles per trip assumptions were used. Existing and proposed plan population from the City's current 3.11 persons per household figure were also used.
Sources: Fehr and Peers, 2013; Michael Brandman Associates, 2013.

As shown in Table 3.3-10, the SEQ Area General Plan Amendments contemplate development activities that have the potential to cause a VMT increase that is much larger than the population increase. These increases were shown to be primarily due to the anticipated commercial and recreational facilities and their respective trip generating capacity (as detailed in Table 9 and Table D1 of the Traffic Impact Analysis, provided as Appendix H of this EIR), including sporting goods store, multi-purpose recreational facility, hotel, drive-through fast-food restaurant, baseball/softball fields, and gas station with market. It should be noted that the values in Table 3.3-10 likely overstate what would actually occur, as they are predicated on full buildout of the SEQ Area to the highest and most intense use. Nonetheless, this is considered a significant impact.

Previous planning projections for the entire City of Morgan Hill have shown similar significant impacts based on this VMT and population rate criterion. During the adoption of the City of Morgan Hill General Plan (General Plan), it was found that growth under the General Plan would result in a VMT growth rate that is faster than the population growth rate, even with mitigation. Updates to the

General Plan, as recent as the 2010 Circulation Element Update, have not changed this significant and unavoidable impact. The environmental analyses performed for the 2010 Circulation Element Update show a projected VMT increase of 50 percent (from 3,871,000 to 5,798,000 daily VMT) through 2030 under the current General Plan. For the same time period, the Association of Bay Area Governments (ABAG) Projections publication estimates a population increase of 14 percent (from 40,246 to 45,800) in Morgan Hill.

In summary, the substantial increase in VMT creates potential conflicts with the planning assumptions contained in the 2010 CAP. Because of the programmatic nature of the SEQ Area General Plan Amendments, it would be premature to require specific mitigation measures to promote VMT reductions, as the feasibility of such measures will be dependant on the characteristics of the end user. Therefore, the impact is significant and unavoidable.

High School Site (Project Level)

Criterion 1

The primary goals of the 2010 CAP (as mentioned previously) are to attain air quality standards, reduce population exposure to unhealthy air and protecting public health in the Bay area, and reduce greenhouse gas emissions and protect the climate. As discussed in Impacts AIR-2, AIR-3, AIR-4, and AIR-5, the High School project would not contribute to localized violation of state or federal air quality standards, contribute to nonattainment status of regional pollutants, expose sensitive receptors to substantial pollutant concentrations, or create objectionable odors affecting a substantial number of people after incorporation of mitigation measures. These impacts are less than significant after implementation of Mitigation Measures AIR-2, HAZ-1a, HAZ-1b, and HAZ-1c. Impact AIR-6, related to greenhouse gas and climate change impacts, shows that the project would not generate a significant amount of greenhouse gases and would not conflict with the applicable plans adopted for reducing the emission of greenhouse gases. Therefore, the High School project would be consistent with this criterion after incorporation of mitigation measures.

Criterion 2

None of the 18 stationary source control measures in the 2010 CAP are applicable to the High School project. In addition, none of the six land use and local impact measures applies to the High School project. One of the 10 mobile source measures (MSM) may apply to the project: MSM C-1 (Construction and Farming Equipment) includes a component to work with local communities, contractors, and developers to encourage the use of renewable alternative fuels in applicable equipment. As stated by the 2010 CAP, MSMs are measures that reduce emissions by accelerating the replacement of older, dirtier vehicles and equipment, and promoting advanced technology vehicles that reduce emissions of criteria pollutants or greenhouse gases. Because of the limited scope of the proposed project, and because the project's construction emissions are below the BAAQMD's threshold of significance for criteria pollutants, MSM C-1 is not applicable to the project.

Of the transportation control measures, TCM D-1 and D-3, apply to the project. Section 3.13, Transportation, details the pedestrian and bicycle infrastructure near the project. The High School site is located in the vicinity of existing bicycle routes and pedestrian access. The location of the High School provides bicycle access to an educational facility and site of employment. Therefore, the High School would support implementation of TCM D-1 and D-3.

In addition, the High School project is anticipated to include a Transportation Demand Management (TDM) program. Mitigation Measure TRANS-3 requires the High School project applicant to submit a TDM Program to the City of Morgan Hill for review and approval. The TDM program must be prepared by a qualified transportation consultant/engineer and identify TDM measures for the proposed High School, including a peak-hour trip reduction goal of at least 10 percent. This will further reduce criteria and greenhouse gas operational emissions associated vehicle activity for the High School.

Regarding energy and climate measures, the project is consistent with ECM-1 (Energy Efficiency). As described in Section 3.14, Utility Systems, Pacific Gas and Electric Company (PG&E) provides electricity and natural gas service to the City of Morgan Hill. PG&E is obligated by the "Renewable Portfolio Standards" provisions of the California Global Warming Solutions Act of 2006 to obtain a minimum of 33 percent of its electricity from renewable sources by 2020. The utility also obtains energy from nuclear and large hydroelectric sources, which do not emit greenhouse gases.

The project would comply with all applicable control measures contained in the 2010 CAP, and, therefore, would not conflict with or obstruct the air quality attainment plan.

Criterion 3

The project will not preclude extension of a transit line or bike path, propose excessive parking beyond parking requirements, or otherwise create an impediment or disruption to implementation of any AQP control measures.

Level of Significance Before Mitigation

SEQ Area (Program Level)

Potentially significant impact.

High School Site (Project Level)

Potentially significant impact.

Mitigation Measures

SEQ Area (Program Level)

No feasible mitigation is available.

High School Site (Project Level)

Implement Mitigation Measures AIR-2, HAZ-1a, HAZ-1b, and HAZ-1c.

Level of Significance After Mitigation

SEQ Area (Program Level)
Significant unavoidable impact.

High School Site (Project Level)
Less than significant impact.

Air Quality Standards/Violations

Impact AIR-2:	**The project would not violate any air quality standard or contribute substantially to an existing or projected air quality violation.**

Impact Analysis

This impact is related to localized criteria pollutant impacts, because these criteria pollutants have corresponding ambient air quality standards. Potential localized impacts of the project would be exceedances of state or federal standards for $PM_{2.5}$, PM_{10}, or CO. The BAAQMD provides recommended thresholds of significance for construction-generated PM_{10} and $PM_{2.5}$ from fugitive dust at the project-level; however, the BAAQMD does not recommend the fugitive dust threshold for plan-level analysis. In addition, the BAAQMD recommends an operational CO threshold at the project level, as described below.

The BAAQMD does not have a quantitative threshold for fugitive dust at the project level. The Air Quality Guidelines determine the significance for fugitive dust through application of Best Management Practices. Therefore, it is recommended that the fugitive dust control measures identified in its Air Quality Guidelines be included to reduce localized dust impacts to less than significant.

The significance criteria for a CO hotspot are the ambient air quality standards of 9.0 ppm (8-hour average) and 20.0 ppm (1-hour average). CO concentrations are estimated at the three intersections with the greatest potential for a CO hotspot. This analysis follows the CO protocol prepared by Caltrans in 1997. According to the CO protocol, intersections with Level of Service (LOS) E or F require detailed analysis. In addition, intersections that operate under LOS D conditions in areas that experience meteorological conditions favorable to CO accumulation require a detailed analysis.

SEQ Area (Program Level)
The SEQ Area includes four programmatic land use projects and several city-initiated General Plan Amendments. No detailed land use plans are available at the time of this writing, nor is there a schedule for submittal of any detailed plans. Because of the programmatic nature of the SEQ Area, evaluating construction fugitive dust emissions and localized CO emissions would be premature. Future development activities that occur within the SEQ Area would be subject to project-level environmental review, including localized CO emissions.

The BAAQMD does provide recommended plan-level thresholds of significance for operational-generated criteria pollutants as a category; the thresholds are examined in Impact AIR-3.

High School Site (Project Level)

Construction Fugitive PM_{10} and $PM_{2.5}$

The BAAQMD recommends that fugitive dust from construction dust be evaluated separately from PM_{10} and $PM_{2.5}$ from exhaust. For construction dust, the BAAQMD recommends incorporation of Best Management Practices to reduce localized dust impacts to less than significant. Since Best Management Practices for construction-generated dust are not addressed in the project's description, it is assumed that the project would not incorporate them. Therefore, without application of Best Management Practices, this impact is potentially significant. Incorporation of Mitigation Measure AIR-2 reduces this impact to less than significant.

Carbon Monoxide

Localized high levels of CO (CO hotspot) are associated with traffic congestion and idling or slow-moving vehicles. BAAQMD recommends a screening analysis to determine if a project has the potential to contribute to a CO hotspot. The screening criteria identify when site-specific CO dispersion modeling is not necessary. The proposed project would result in a less than significant impact to air quality for local CO if all of the following screening criteria are met:

- Project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, regional transportation plan, and local congestion management agency plans; or
- The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour; or
- 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).

The Transportation Impact Analysis prepared by Fehr & Peers and contained in the technical appendices of the EIR analyzes the project's potential to conflict with the applicable Congestion Management Plan (CMP). None of the intersections analyzed for the High School project are designated CMP intersections, but there would be significant impacts to the level of service (LOS) at the Tennant Avenue/Murphy Avenue intersection. The mitigation measures in the traffic impact report improve the operations to acceptable LOS, and would reduce the impact to less than significant. Analysis of freeway segments found that the High School project has the potential for significant impacts to the LOS on the section of northbound US 101 between Tennant Avenue and Dunne Avenue. The mitigation measures discussed in the report may reduce the severity of the

impact, but the impact would be considered significant and unavoidable. These impacts could conflict with the Congestion Management Plan.

The High School is expected to generate maximum traffic volumes at the Dunne/US 101 SB Ramp intersection, with cumulative plus project volumes of 2,979 vehicles per hour in the AM peak-hour and 2,395 vehicles per hour in the PM peak-hour. These peak-hour traffic volumes are well below the screening criterion of 44,000 vehicles per hour. The High School would not increase traffic volumes in an area where vertical and/or horizontal mixing is substantially limited.

Because the project does not meet all three screening criteria after application of the mitigation measures in the Transportation Impact Analysis, the High School project may result in a significant impact to air quality for local CO. Therefore, CO hotspot analysis using CALINE4 was prepared for the impacted intersections in the existing plus project and cumulative 2030 plan plus project scenarios.

Using the CALINE4 model, potential CO hotspots are analyzed at impacted intersections identified in the Existing Plus Project and 2030 Cumulative General Plan Plus Project conditions in the traffic impact study of the High School. Under the Existing Plus Project scenario, the Tennant Avenue/ Murphy Avenue intersection operated at LOS F. No other intersections were estimated to operate below LOS C in the Existing Plus Project conditions. Under the Cumulative Plus Project scenario, the Tennant Avenue/US 101 Southbound Ramps, Tennant Avenue/Condit Road, and Tennant Avenue/Murphy Avenue intersections operated at LOS F. No other intersections were estimated to operate below LOS D in the Cumulative Plus Project conditions. These intersections were analyzed for CO hotspot potential. The traffic volumes were obtained from the traffic study. The emission factors were generated using the EMFAC2011 model for the BAAQMD area for year 2017 in the Existing Plus Project conditions and the year 2030 in the 2030 Cumulative General Plan Plus Project conditions.

No CO monitoring data was available at the San Martin or Gilroy stations. The nearest monitoring station with CO data is located in San Jose. Although San Jose's urban setting is likely to produce higher background CO concentrations than those in Morgan Hill, the data should provide a very conservative estimate of CO hotspots in the area.

As shown in Table 3.3-11, the estimated 1-hour and 8-hour average CO concentrations in combination with background concentrations (unmitigated) are below the state and national ambient air quality standards. Therefore, the mobile emissions of CO from the project are not anticipated to contribute substantially to an existing or projected air quality violation of CO. Impacts would be less than significant.

Table 3.3-11: Localized Carbon Monoxide Concentrations

Intersection	1-hour Estimated CO Concentration (ppm)	8-hour Estimated CO Concentration (ppm)	Significant Impact?
Tennant Avenue/Murphy Avenue (AM hour, Existing Plus Project)	4.2	2.9	No
Tennant Avenue/Murphy Avenue (AM hour, Cumulative Plus Project)	3.9	2.7	No
Tennant Avenue/Condit Road (AM hour, Cumulative Plus Project)	3.8	2.6	No
Tennant Avenue/US 101 SB Ramps (PM hour, Cumulative Plus Project)	4.0	2.8	No

Notes:
ppm = parts per million
The 8-hour background concentration is from the 2009 maximum CO measured at the San Jose monitoring site.
The 1-hour background concentration was calculated by dividing the 8-hour concentration of 2.50 by the persistence factor of 0.7.
The 8-hour project increment was calculated by multiplying the 1-hour CALINE4 output by 0.7 (persistence factor), then adding the 8-hour background concentration.
The significance determination is by comparison of the 1-hour concentration to the state standard of 20 ppm, and the 8-hour concentration to the state/national standard of 9 ppm.
Source: Michael Brandman Associates, 2013.

Level of Significance Before Mitigation

SEQ Area (Program Level)

Less than significant impact.

High School Site (Project Level)

Potentially significant impact.

Mitigation Measures

MM AIR-2 **High School Site.** All construction activity: During construction activities, the following air pollution control measures shall be implemented:

- Exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day, or more as needed to prevent dust.
- All haul trucks transporting soil, sand, or other loose material offsite shall be covered.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads and surfaces shall be limited to 15 mph.

- All roadways, driveways, and sidewalks shall be paved as soon as possible in order to prevent dust.
- A publicly visible sign shall be posted with the telephone number and person to contact at the City of Morgan Hill regarding dust complaints. This person shall respond and take corrective action within 48 hours of a complaint or issue notification. The Bay Area Air Quality Management District's phone number shall also be visible to ensure compliance with applicable regulations.

Level of Significance After Mitigation

SEQ Area (Program Level)
Less than significant impact.

High School Site (Project Level)
Less than significant impact.

Criteria Pollutant

Impact AIR-3:	**The project may result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors).**

Impact Analysis

The nonattainment pollutants of concern for this impact are ozone, PM_{10} and $PM_{2.5}$. Ozone is not emitted directly into the air, but is a regional pollutant formed by a photochemical reaction in the atmosphere. Ozone precursors, ROG and NO_x, react in the atmosphere in the presence of sunlight to form ozone. Therefore, the BAAQMD does not have a recommended ozone threshold, but it does has regional thresholds of significance for project-emitted NO_x and ROG.

BAAQMD has determined that a project-level exceedance of the thresholds presented in Table 3.3-12 would have significant adverse impact on the air quality in the Air Basin by jeopardizing attainment of the federal standards. Therefore, projects within the Air Basin with construction or operational emissions in excess of any of the thresholds in Table 3.3-12 are considered to have a significant regional air quality impact.

Table 3.3-12: Bay Area Air Quality Management District Project-Level Mass Thresholds

Pollutant	Construction-Related	Operational-Related
Reactive organic gases (ROG)	54 lbs per day	54 lbs per day, and 10 tons per year
Nitrogen oxides (NO_x)	54 lbs per day	54 lbs per day, and 10 tons per year

Table 3.3-12 (cont.): Bay Area Air Quality Management District Project-Level Mass Thresholds

Pollutant	Construction-Related	Operational-Related
PM_{10} (Exhaust)	80 lbs per day	80 lbs per day, and 15 tons per year
$PM_{2.5}$ (Exhaust)	54 lbs per day	54 lbs per day, and 10 tons per year

Notes:
The District's 1999 guidelines identify operational thresholds of 15 tons per year for ROG, NO_x, and PM_{10} and 80 pounds per day for ROG, NO_x, and PM_{10}. The 1999 guidelines do not specify construction thresholds. Therefore, for purposes of this analysis, the thresholds in the 2011 guidelines are used since they are more stringent, with the exception of daily PM_{10} emissions, which use the 1999 guidelines since they call for 2 pounds per day less.
Abbreviation: lbs = pounds
Source: BAAQMD 2011b

BAAQMD's 2011 Guidance states the following:

> In developing thresholds of significance for air pollutants, BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. Therefore, additional analysis to assess cumulative impacts is unnecessary. The analysis to assess project-level air quality impacts should be as comprehensive and rigorous as possible.

Therefore, if the project's emissions are below the BAAQMD thresholds or the screening criteria, then the project's cumulative impact would be less than significant. BAAQMD has developed screening levels to help determine when additional analysis is necessary to determine significance for criteria pollutant emissions. The screening levels represent the size of development by land use type at which BAAQMD's emissions threshold of significance for ROG, NO_x, PM_{10}, and $PM_{2.5}$ would not be exceeded.

For plan-level analysis, the BAAQMD provides recommended thresholds of significance for operational-generated criteria pollutants as a category, as opposed to the mass emissions-based thresholds put forth for project-level analysis.

SEQ Area (Program Level)

Operational Emissions

Pursuant to the BAAQMD, a project would be less than significant for criteria air pollutants and precursors if it meets the following criteria:

- Consistency with current air quality plan control measures,
- Projected VMT or vehicle trips increase is less than or equal to projected population increase.

These two criteria are analyzed in Impact AIR-1 under Criterion 2 and VMT Analysis. The SEQ Area includes four programmatic land use projects and several city-initiated General Plan Amendments. No detailed land use plans are available at the time of this writing, nor is there a schedule for submittal of any detailed plans. Because of the programmatic nature of the SEQ Area, evaluating consistency with air quality plan control measures would be premature. Future development activities that occur within the SEQ Area would be subject to project-level environmental review, including air quality plan control measures.

The VMT Analysis found the project would exceed the BAAQMD's criteria of significance for this impact. Because the SEQ Area plan does not contain a land-use policy document or detailed land use proposals, no mitigation measures are available. Therefore, this impact is significant and unavoidable.

High School Site (Project Level)

Construction Emissions

Preliminary screening for construction-related criteria pollutants involves meeting criteria for screening size, implementing all basic construction mitigation measures, and exclusion of the following construction related activities:

- Demolition activities inconsistent with BAAQMD Regulation 11, Rule 2: Asbestos Demolition, Renovation and Manufacturing
- Simultaneous occurrence of more than two construction phases (e.g., paving and building construction would occur simultaneously)
- Simultaneous construction of more than one land use type
- Extensive site preparation
- Extensive material transport (i.e., greater than 10,000 cubic yards of soil import or export)

BAAQMD does not specify a volume of material or soils movement that would be considered "extensive" for site preparation. According to the BAAQMD's 2011 Guidance, extensive site preparation is considered greater than the default assumptions in the emissions model for grading, cut/fill, or earth movement. The default volumes of materials movement for grading and cut/fill are assumed to apply to the project.

At buildout, the High School would accommodate 1,600 students and encompass approximately 210,441 square feet, meeting the applicable screening criteria of 3,012 students and 277,000 square feet for construction-related criteria air pollutants. Because of the nature of the project and the proposed site, it is assumed that simultaneous construction phases, extensive site preparation, or extensive material transport would not occur. Construction of multiple land use types is not anticipated at the High School site. Therefore, this impact is less than significant.

Operational Emissions

The operational screening criterion provided by the BAAQMD was utilized to identify if the High School as a project would result in a less than significant impact to air quality for criteria air pollutants and precursors. The High School's student population and square footage meet the BAAQMD's screening size of 2,390 students and 311,000 square feet, respectively (BAAQMD 2011b). Therefore, the operation of the High School would not result in the generation of ozone precursors (ROG and NO_x), PM_{10}, or $PM_{2.5}$ emissions that exceed of the thresholds of significance.

Level of Significance Before Mitigation

SEQ Area (Program Level)
Potentially significant impact.

High School Site (Project Level)
Less than significant impact.

Mitigation Measures

SEQ Area (Program Level)
No feasible mitigation is available.

High School Site (Project Level)
No mitigation is necessary.

Level of Significance After Mitigation

SEQ Area (Program Level)
Significant and unavoidable impact.

High School Site (Project Level)
Less than significant impact.

Sensitive Receptors

Impact AIR-4:	**The project would not expose sensitive receptors to substantial pollutant concentrations.**

Impact Analysis

This discussion addresses whether the project would expose sensitive receptors to substantial pollutant concentrations of CO, DPM, or other TACs of concern. A health risk is the probability that exposure to a given TAC under a given set of conditions will result in an adverse health effect. The health risk is affected by several factors, such as the amount, toxicity, and concentration of the contaminant; meteorological conditions; distance from the emission sources to people; the distance between the emission sources; the age, health, and lifestyle of the people living or working at a location; and the length of exposure to the TAC. A list of existing sensitive receptors located near the project is provided in the section on Local Air Quality.

Two scenarios have the potential for exposing sensitive receptors to TACs. The first is when a project includes a new or modified source of TACs and would be located near an existing or proposed sensitive receptor. The second scenario involves a residential or other sensitive receptor development locating near an existing or planned source of TACs.

SEQ Area (Program Level)

The BAAQMD Air Quality Guidelines indicate that for plans to have a less than significant impact with respect to potential TACs, special overlay zones need to be established around existing and proposed land uses that emit TACs. The BAAQMD recommends that special overlay zones be included in proposed plan policies, land use maps, and implementing ordinances.

The thresholds of significance related to community risk and hazard impacts are as follows:

1. The land use diagram must identify:
    a. Special overlay zones around existing and planned sources of TACs;
    b. Special overlay zones of at least 500 feet (or BAAMQD-approved modeled distance) on each side of all freeways and high-volume roadways
2. The plan must also identify goals, policies, and objectives to minimize potential impacts and create overlay zones for sources of TACs and receptors.

ARB's Land Use Handbook offers advisory recommendations for locating sensitive receptors near uses associated with TACs, such as freeways and high traffic roads, commercial distribution centers, rail yards, ports, refineries, chrome platers, dry cleaners, gasoline stations, and other industrial facilities, to reduce exposure of sensitive populations.

Planned Sources

The project description states that Subdistrict B of the SEQ Area would be used for commercial purposes, including the possible siting of a gas station, which may be considered a new source. As the specific location of a gas station has not been identified, and there is currently no specific schedule or anticipated date for the submittal of detailed land use proposals, mitigation is applied to ensure that any planned source of TACs would not be located near sensitive receptors. Mitigation Measure AIR-4a would reduce the potential for TAC impacts to less than significant. This mitigation measure is consistent with plans for project-level CEQA review when detailed land use proposals are submitted for discretionary approval, as stated previously in the project description.

Existing Sources

Sources within 1,000 feet of the SEQ Area boundary are shown in Exhibit 3.3-1. A Verizon Wireless station (BAAQMD plant number 18616) is located adjacent to the SEQ Area boundary, situated just north of San Pedro Avenue, between Murphy Avenue and Hill Road. The Dunne Hill Fire Station (BAAQMD plant number 19961) is located north of the SEQ Area boundary at Dunne Avenue and Hill Road, although no environmental or health hazard data is available in the Fire Department's

BAAQMD stationary source listing. US 101 is adjacent to the southwest portion of the SEQ Area and runs parallel to the northwest project boundary. The section of US 101 adjacent to the proposed project meets the BAAQMD's definition of a "significant traffic volume roadway," which includes freeways or arterial roadway with greater than 10,000 vehicles per day. Pursuant to the BAAQMD guidelines, these sources and applicable overlay zones are shown in Exhibit 3.3-2.

The SEQ Area plan contains residential and recreational land use designations that may be considered sensitive receptors. The planned residential land use area is outside of the overlay zones for the stationary source and high-volume freeway. Therefore, impacts to these receptors are less than significant. The specific locations of recreational facilities within the designated land use areas have not been identified. Therefore, mitigation is applied to ensure that sensitive receptors are not located close to existing sources of TACs. Implementation of Mitigation Measure AIR-4b would reduce the potential for TACs impacts to less than significant. As with the planned source, this mitigation measure is consistent with plans for project-level CEQA review when detailed land use proposals are submitted for discretionary approval.

Naturally Occurring Asbestos

Construction in areas of rock formations that contain naturally occurring asbestos could release asbestos in to the air and pose a health hazard. As described in the Regulatory Setting, BAAQMD enforces ARB's air toxic control measures (ATCMs) at sites that contain ultramafic rock. The ATCM for Construction, Grading, Quarrying and Surface Mining Operations was signed into state law on July 22, 2002, and became effective in the Air Basin in November 2002. The purpose of this regulation is to reduce public exposure to naturally occurring asbestos.

The Department of Conservation, Division of Mines and Geology published *A General Location Guide for Ultramafic Rocks in California* – Areas More Likely to Contain Naturally Occurring Asbestos, dated August 2002, for generally identifying areas that are likely to contain naturally occurring asbestos. A review of the map containing areas more likely to have rock formations containing naturally occurring asbestos in California indicates that the planned SEQ Area is not in an area likely to contain naturally occurring asbestos. Therefore, it can be reasonably concluded that naturally occurring asbestos is not present in the SEQ Area. Impacts would be less than significant.

Asbestos During Demolition Activities

Structures to be demolished sometimes contain asbestos containing materials. As discussed in Impact HAZ-1, asbestos-containing material may be present in the SEQ Area, although the impacts would be less than significant. Furthermore, demolition of existing buildings and structures would be subject to BAAQMD Regulation 11, Rule 2 (Asbestos Demolition, Renovation, and Manufacturing), which is intended to limit asbestos emissions from demolition or renovation of structure and the associated disturbance of asbestos-containing waste material generated or handled during these activities. The rule addresses the national emissions standards for asbestos along with some additional requirements. The rule requires the Lead Agency and its contractors to notify BAAQMD of any regulated

renovation or demolition activity. This notification includes a description of structures and methods utilized to determine whether asbestos-containing materials are potentially present. All asbestos-containing material found on the site must be removed prior to demolition or renovation activity in accordance with BAAQMD Regulation 11, Rule 2, including specific requirements for surveying, notification, removal, and disposal of asbestos-containing materials. Therefore, projects that comply with BAAQMD Regulation 11, Rule 2 would ensure that asbestos-containing materials would be removed and disposed of appropriately and safely. By complying with BAAQMD Regulation 11, Rule 2, thereby minimizing the release of airborne asbestos emissions, demolition activity would not result in a significant impact to air quality.

High School Site (Project Level)

Existing Sources

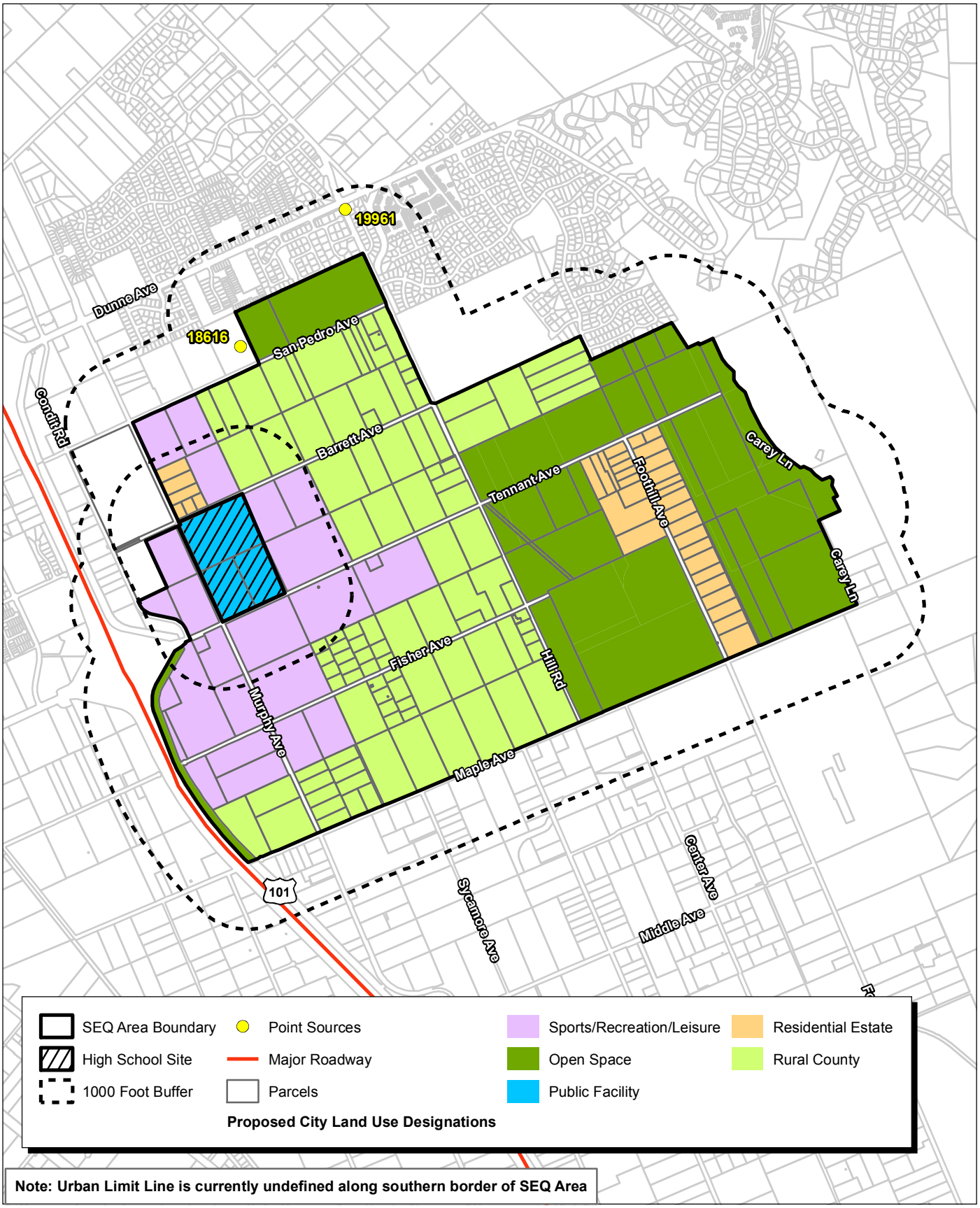
Sources within 1,000 feet of the High School site boundary are shown in Exhibit 3.3-1. The High School is considered a sensitive receptor, but no existing sources or major roadways were identified within a 1,000-foot radius of the High School. The nearest BAAQMD-permitted stationary source, a Verizon Wireless Station (BAAQMD plant number 18616), is located over 2,000 feet northeast of the site. The nearest major roadway (US 101) is located 1,500 feet west of the High School boundary. Based on these criteria, the BAAQMD does not recommend further analysis of TAC impacts to this receptor.

Naturally Occurring Asbestos

According to a map of areas more likely to have rock formations containing naturally occurring asbestos by the California Division of Mines and Geology, the High School site is not located in an area likely to contain naturally occurring asbestos. Therefore, it can be reasonably concluded that naturally occurring asbestos is not present in the High School site area.

Asbestos During Demolition Activities

As discussed in Impact HAZ-1, asbestos-containing material may be present at the High School site at potentially significant levels before mitigation. Implementation of Mitigation Measures HAZ-1a, HAZ-1b, and HAZ-1c would reduce the impacts to a less than significant level. Additionally, demolition of existing buildings and structures would be subject to BAAQMD Regulation 11, Rule 2 (Asbestos Demolition, Renovation, and Manufacturing), as described in the SEQ Area section of this air impact. Compliance with this regulation and implementation of the Hazardous Materials mitigation measures would result in a less than significant impact.



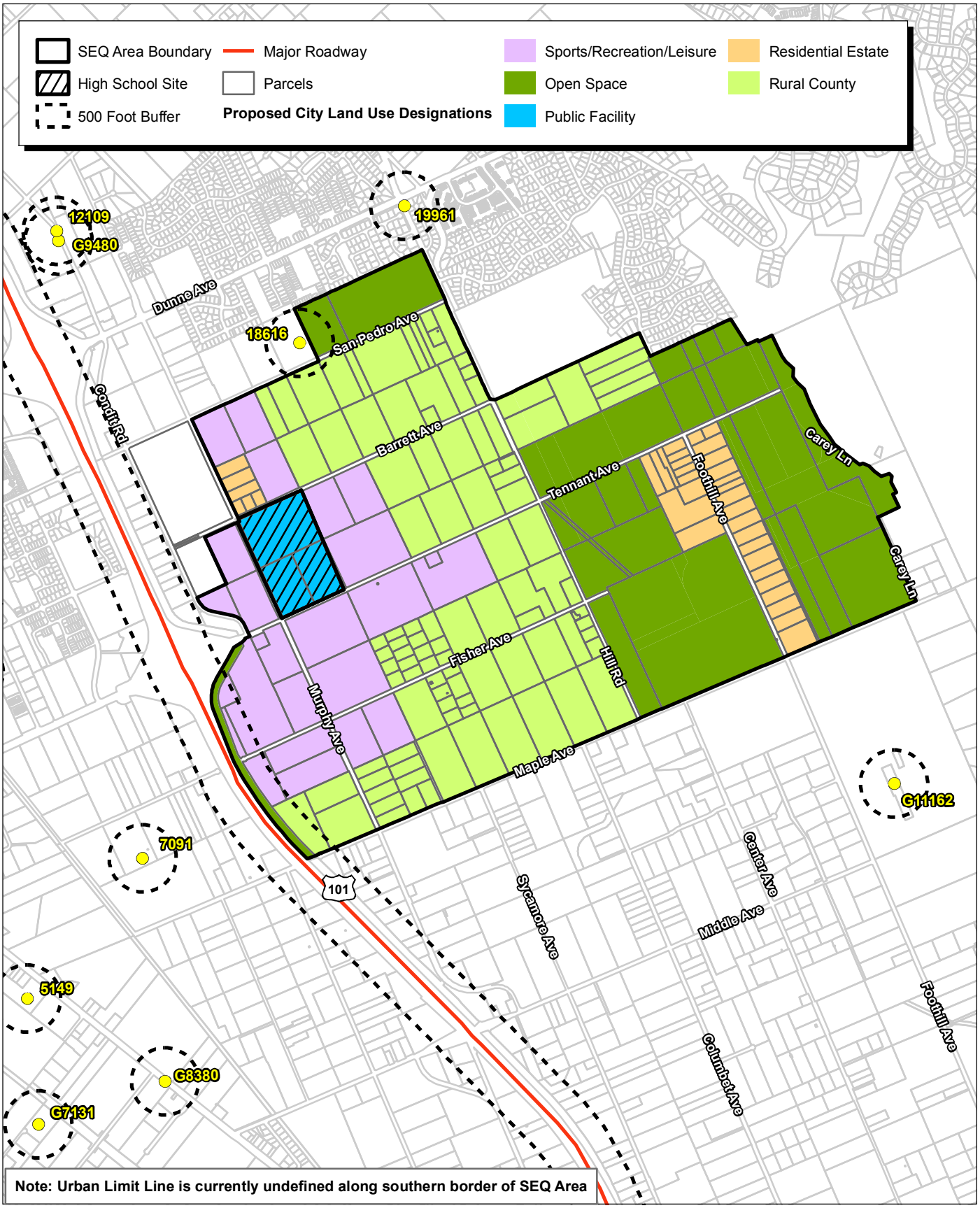
Source: City of Morgan Hill (2010).

Michael Brandman Associates

NORTH

2,000 1,000 0 2,000 Feet

Exhibit 3.3-1
Nearby Sources and Major Roadways



Source: City of Morgan Hill (2010).

NORTH

2,000 1,000 0 2,000 Feet

Michael Brandman Associates

Exhibit 3.3-2
Overlay Zones for TAC Sources and Major Roadways

Level of Significance Before Mitigation

SEQ Area (Program Level)
Potentially significant impact.

High School Site (Project Level)
Potentially significant impact.

Mitigation Measures

MM AIR-4a **SEQ Area.** Prior to the final discretionary approval for any gas station that is proposed pursuant to the Morgan Hill SEQ General Plan Amendments, the City of Morgan Hill shall determine the area of impact from toxic emissions from the gas station that may potentially exceed the BAAQMD significance criteria for cancer or non-cancer toxic air contaminant exposure. Impacts from the stationary source shall be compared with the distance threshold recommended by California Air Resources Board's Land Use Handbook distance guidance. If the source is proposed within an area exceeding the threshold, the City shall require a Health Risk Assessment to be prepared in accordance with BAAQMD guidance to determine the refined impact level and to identify operational measures or design features that shall be implemented as part of a project to reduce the impact to less than significant levels. No construction of any stationary source shall be allowed that places sensitive receptors within the area of impact as described above, unless the estimated health risk is first determined to be less than the BAAQMD's significance criteria for toxic air contaminant exposure.

MM AIR-4b **SEQ Area.** Prior to the final discretionary approval for any recreational use that is proposed pursuant to the Morgan Hill SEQ General Plan Amendments, the City of Morgan Hill shall determine the area of impact from toxic emissions from US 101 and existing stationary sources that may potentially exceed the BAAQMD significance criteria for cancer or non-cancer toxic air contaminant exposure. Emissions from US 101 shall be estimated using the BAAQMD roadway screening tool. In addition, distance to stationary sources near the project shall be compared with the distance threshold recommended by California Air Resources Board's Land Use Handbook distance guidance. If recreational projects are proposed within an area exceeding the screening threshold, the City shall require a Health Risk Assessment to determine the potential health risk level and to identify design features that shall be installed to reduce the impact to less than significant levels. No construction of any sensitive receptor land use within the area of impact of US 101 or stationary source as described above shall be allowed unless the risk is first determined to be less than the BAAQMD's significance criteria for toxic air contaminant exposure.

High School Site (Project Level)
Implement Mitigation Measure HAZ-1a, HAZ-1b, and HAZ-1c.

Level of Significance After Mitigation

SEQ Area (Program Level)
Less than significant impact.

High School Site (Project Level)
Less than significant impact.

Odors

Impact AIR-5:	**The project would not create objectionable odors affecting a substantial number of people.**

Impact Analysis

The BAAQMD does not have a recommended odor threshold for construction activities. However, BAAQMD recommends screening criteria that are based on distance between types of sources known to generate odor and the receptor. For projects within the screening distances, the BAAQMD has the following threshold for project operations:

> An odor source with five (5) or more confirmed complaints per year averaged over three years is considered to have a significant impact on receptors within the screening distance shown in Table 3-3 [of the BAAQMD's guidance].

Two circumstances have the potential to cause odor impacts:

1) A source of odors is proposed to be located near existing or planned sensitive receptors, or
2) A sensitive receptor land use is proposed near an existing or planned source of odor.

SEQ Area (Program Level)
The SEQ Area plan contains areas that may be considered a sensitive receptors, but are not a typical sources of objectionable odors. Typical sources of objectionable odors include agricultural operations (dairies, feedlots, etc.), landfills, wastewater treatment plants, refineries, and other types of industrial land uses.

Green South Bay Corporation/Westside Recycling is a recycling center located less than 1 mile west of the SEQ Area boundary. The BAAQMD's guidance provides an odor screening distance of 1 mile for green waste and recycling operations. Because the SEQ Area is located within the screening distance recommended by the BAAQMD, additional odor analysis is warranted. The BAAQMD was contacted to determine the number of odor complaints, if any, for Westside Recycling for the period between February 2010 and February 2013. The BAAQMD found no odor complaints for Westside

Recycling during this 3-year period. Therefore, the project would not place sensitive receptors near a location of substantial objectionable odor, and odor impacts would be less than significant.

The San Martin Transfer Station is located more than 1 mile south of the SEQ Area. This is beyond the BAAQMD recommended screening distance for transfer station odor sources; therefore, no additional analysis was performed.

In addition, two mushroom farms are located within 1 mile of the SEQ Area. South Valley Mushroom Farm is located approximately 0.7 mile north of the SEQ Area. Royal Oaks Mushrooms is located approximately 0.9 mile southwest off the SEQ Area. The BAAQMD's guidance does not contain screening distances for mushroom farms. However, mushroom farming is known to generate odors from composting action during the substrate-preparation process. Mushroom composting is high-temperature (greater than 150°F), whereas municipal-waste or green-waste composting is done at low temperatures (less than 150°F). The BAAQMD's guidance provides an odor screening distance of 1 mile for composting operations. Because the SEQ Area is located within the screening distance recommended by the BAAQMD, additional odor analysis is warranted. The BAAQMD was contacted to determine the number of odor complaints, if any, for the South Valley Mushroom Farm and Royal Oaks Mushrooms facilities for the period between February 2010 and February 2013. The BAAQMD found no odor complaints for either facility during this 3-year period. The BAAQMD found one unconfirmed odor complaint, which occurred on January 22, 2013. Because the odor complaint was unconfirmed, it is unknown which facility was the subject of the complaint. The BAAQMD's threshold is five or more confirmed complaints per year averaged over 3 years; therefore, the project would not place sensitive receptors near a location of substantial objectionable odor, and odor impacts would be less than significant.

It should also be noted the City of Morgan Hill has an adopted Right to Farm Ordinance to support and encourage continued agricultural operations in the City, County and State. The Right to Farm Ordinance requires disclosures as part of the transfer of real property stating that agricultural operations where permitted and conducted in a manner consistent with accepted customs and practices shall not be deemed a nuisance by the City. The disclosure statement is required to include a list of the effects and inconveniences (such as odors) that can be associated with living near agricultural operations.

High School Site (Project Level)

The High School is considered a sensitive receptor but is not a typical source of objectionable odors. Typical sources of objectionable odors include agricultural operations (dairies, feedlots, etc.), landfills, wastewater treatment plants, refineries, and other types of industrial land uses.

Green South Bay Corporation/Westside Recycling is a recycling center located approximately 1 mile west of the High School site boundary. Royal Oaks Mushrooms is a mushroom farm located approximately 0.9 mile west of the High School site boundary. No confirmed odor complaints were

found for either facility, as described previously in the SEQ Area odor analysis. However, one unconfirmed odor complaint was received by the BAAQMD in January 2013. Because the odor complaint was unconfirmed, it is unknown which facility was the subject of the complaint. The South Valley Mushroom Farm is located approximately 1.3 miles north of the High School site boundary and is not within the screening distance for composting facilities. Therefore, no additional odor analysis is warranted for the South Valley Mushroom Farm. The BAAQMD's threshold is five or more confirmed complaints per year averaged over 3 years; therefore, the High School would not place sensitive receptors near a location of substantial objectionable odor, and odor impacts would be less than significant.

In addition, the City of Morgan Hill has an adopted Right to Farm Ordinance to support and encourage continued agricultural operations in the City, County and State. The Right to Farm Ordinance requires disclosures as part of the transfer of real property stating that agricultural operations where permitted and conducted in a manner consistent with accepted customs and practices shall not be deemed a nuisance by the City. The disclosure statement is required to include a list of the effects and inconveniences (such as odors) that can be associated with living near agricultural operations.

The Morgan Hill Aquatics Center and the Outdoor Sports Center are areas of sensitive receptors located within 1,000 feet of the High School site. Heavy-duty construction equipment used for project construction at this site would emit odors. However, construction activity would be short-term and finite in nature. Furthermore, equipment exhaust odors would dissipate quickly, and are common in an urban environment. Therefore, the project would not create objectionable odors affecting a substantial number of people.

Level of Significance Before Mitigation

SEQ Area (Program Level)
Less than significant impact.

High School Site (Project Level)
Less than significant impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

SEQ Area (Program Level)
Less than significant impact.

High School Site (Project Level)
Less than significant impact.

Greenhouse Gas Generation and Plan Consistency

Impact AIR-6:	**The project would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; the project would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.**

Impact Analysis

The BAAQMD provides multiple recommended thresholds in its 2011 Air Guidance for project-level and plan-level greenhouse gas generation from project operation. The 2011 Air Guidance does not provide a construction-related greenhouse gas threshold. These thresholds are described in the following sections where applicable.

SEQ Area (Program Level)

The thresholds suggested in BAAQMD's 2011 Guidance document for plan-level operational greenhouse gas generation are:

- Compliance with a qualified Greenhouse Gas Reduction Strategy, or
- 6.6 metric tons of CO_2 equivalent per service population (employees plus residents).

As discussed in the Regulatory Framework section, the City of Morgan Hill has an action statement in the General Plan to adopt a Climate Action Plan by 2015. In the absence of a qualified Greenhouse Gas Reduction Strategy, greenhouse gas emissions were modeled in accordance with BAAQMD guidance. Operational CO_2 equivalent emissions for the SEQ Area project were modeled using CalEEMod; however, there was insufficient project information to determine the projected service population and evaluate the SEQ Area plan based on the CO_2 equivalent per service population criteria. Instead, potential significance was determined using the greenhouse gas reductions put forth by the ARB in the Climate Change Scoping Plan (Scoping Plan) in 2008. Pursuant to the requirements of AB 32, the Scoping Plan outlined necessary actions to reduce greenhouse gases to 1990 levels by the year 2020. As stated in the Regulatory Framework section, ARB adopted a supplement to this Scoping Plan in 2011 that called for a greenhouse gas reduction of 21.7 percent from business-as-usual emission levels projected for 2020.

The SEQ Area plan greenhouse gas emissions were modeled for the year 2020 and for the year 2005 (business-as-usual conditions). Business as usual for purposes of the greenhouse gas significance threshold is defined as pre-AB 32.. For emissions modeling, business as usual greenhouse gas emissions refer to emissions using protocol and emission factors from the period of 2004–2006 (prior to the adoption of AB 32 and related greenhouse gas regulations) and also do not take into account project design features or mitigation measures to reduce greenhouse gas emissions. AB 32 was adopted in 2006, and the ARB's Scoping Plan to achieve the emission reduction goals of AB 32 in 2008. According to the 2008 Scoping Plan, the plan for reducing greenhouse gas emissions to 1990 levels means cutting approximately 30 percent from business-as-usual emission levels projected for 2020, or about 15 percent from "today's" levels. The "today" referenced by the Scoping Plan is

2008. As noted in the regulatory section, ARB recently updated the year 2020 business as usual scenario, reducing it from 596 $MMTCO_2e$ to 545 $MMTCO_2e$. Therefore, statewide emissions in year 2020 must be reduced 21.7 percent from the business-as-usual estimate.

This project used 2005 business-as-usual emissions as the original air quality analysis was released in 2005 and CalEEMod does not provide for incremental years between 2005 and 2010. The California Air Resources Board's Scoping Plan indicates that business as usual is projected emissions without any greenhouse gas reduction measures. The business-as-usual forecast does not take any credit for reductions from measures included in this project, including the Pavley greenhouse gas emissions standards for vehicles. As stated in the regulatory section, the Pavley regulations reduce greenhouse gases emitted by new passenger vehicles and light duty trucks; the standards set by Pavley are implemented in phases starting with the 2009 model year and continuing through the 2016 model year. This methodology is consistent with the ARB's Scoping Plan.

Results of this analysis are presented in Table 3.3-13. Model parameters and outputs are provided in Appendix C. The results show a 24-percent reduction in 2020 greenhouse gas emissions compared with business-as-usual, which meets the 21.7-percent greenhouse gas reduction called for by the ARB Scoping Plan. The reduction is achieved through implementation of state emission reduction regulations as well City General Plan policies (such as OSC Policy 7a which encourages new development to exceed State standards for water and energy efficiency) that would reduce water consumption and energy consumption from the projected land uses. Therefore, the SEQ Area plan is consistent with the Scoping Plan to reduce greenhouse gases, and impacts are anticipated to be less than significant.

Table 3.3-13: SEQ Area Plan Greenhouse Gas Emissions

Year/Scenario	Emissions ($MTCO_2e$/year)
2020	20,409
2005 (business-as-usual)	26,903
Reduction from business-as-usual	**6,494**
Percent reduction	**24**
Source: Michael Brandman Associates, 2013.	

High School Site (Project Level)

The BAAQMD's 2011 Guidance document provides multiple threshold options for project-level operational greenhouse gas generation. These thresholds are:

- Compliance with a qualified Greenhouse Gas Reduction Strategy, or
- 1,100 metric tons of CO_2 equivalent per year, or
- 4.6 metric tons of CO_2 equivalent per service population (employees plus residents).

In addition, the BAAQMD provides screening criteria for land uses to determine when additional analysis is warranted. The High School does not meet the screening criteria put forth by BAAQMD for greenhouse gas impacts; therefore, additional analysis is warranted to determine the level of significance.

As discussed in the Regulatory Framework section, the City of Morgan Hill has an action statement in the General Plan to adopt a Climate Action Plan by 2015. In the absence of a qualified Greenhouse Gas Reduction Strategy, greenhouse gas emissions were modeled in accordance with BAAQMD guidance. The threshold criterion of 4.6 metric tons of CO_2 equivalent per service population was selected to determine the level of significance for the High School site.

Operational CO_2 equivalent emissions for the project were modeled using CalEEMod. Model parameters and outputs are provided in Appendix C. The results in Table 3.3-14 show that the total greenhouse gas emissions are 5,459 $MTCO_2e$/yr, or 3.16 $MTCO_2e$/service population/yr. The emissions on a service population basis are below the threshold of significance for greenhouse gas generation. Therefore, these emissions are anticipated to be less than significant.

Table 3.3-14: Operational Greenhouse Gas Emissions for High School

Source	Emissions ($MTCO_2e$/year)
Energy	593
Mobile	4,697
Waste	133
Water	36
Total Project Annual Emissions	**5,459**
Project Service Population[1]	**1,175**
Emissions per service population	**3.16**

Notes:
$MTCO_2e$ = metric tons of carbon dioxide equivalents
1. Full buildout assumes 1,600 students plus staff. The service population was pro-rated to account for students and staff to estimate full-time equivalents. Therefore, for the purposes of analysis, the service population used was 1,175 people (students + staff).
Source of total emissions: Michael Brandman Associates, 2013 (Appendix C, CalEEMod output for 2017, assuming full buildout).

Level of Significance Before Mitigation

SEQ Area (Program Level)
Less than significant impact.

High School Site (Project Level)
Less than significant impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

SEQ Area (Program Level)

Less than significant impact.

High School Site (Project Level)

Less than significant impact.

Climate Change Adaptation

Impact AIR-7:	**The project would not be significantly affected by climate change impacts, including increased wildfires, increased flooding, decreased water supply, or sea level rise.**

Impact Analysis

SEQ Area (Program Level)

The SEQ Area plan is not located in a designated fire hazard severity zone. However, the undeveloped foothills, located adjacent to the east boundary of the SEQ Area, may be susceptible to wildland fires and are designated as moderate fire hazard severity zones by Cal Fire (2007). Development activities that occur near this border may be impacted by increased wildfire risks; although, future development activities that occur within the SEQ Area pursuant to the boundary adjustments and land use designations changes would be subject to project-level environmental review, as well as fire safety requirements.

The SEQ Area is located at approximately 100 meters above sea level and, therefore, would not be inundated by the predicted sea level rise discussed in the Environmental Settings section. As discussed in Impact HYD-3, the SEQ Area contains sections along Hill Road and Condit Road that are within the 100-year flood plain, although there is currently no known literature that suggests an increase in flooding from climate change in the Morgan Hill area.

As discussed in Section 3.14, Utility Systems section, adequate water supplies are projected for the Santa Clara Valley Water District (SCVWD) under normal and dry year scenarios through 2035. Additionally, the SEQ Area plan would not substantially deplete groundwater supplies or interfere with groundwater recharge, as discussed in Impact HYD-2.

High School Site (Project Level)

The High School site is located in an area surrounded by parcels containing urban and agricultural development, and is not located within or adjacent to a wildfire susceptible area (CALFIRE 2007). The High School is not exposed to the potential for wildfire impacts, as the nearest area at risk of wildfire is more than 1 mile east of the site.

The High School site is located at approximately 100 meters above sea level, and therefore, would not be inundated by the predicted sea level rise discussed in the Environmental Settings section. As described in Section 3.8, Hydrology and Water Quality, the High School site is not located within the 100-year flood plain.

According to Section 3.14, Utility Systems, adequate water supplies are projected for the SCVWD under normal and dry year scenarios through 2035. Additionally, the High School would not substantially deplete groundwater supplies or interfere with groundwater recharge, as discussed in Impact HYD-2.

Level of Significance Before Mitigation

SEQ Area (Program Level)
Less than significant impact.

High School Site (Project Level)
Potentially significant impact.

Mitigation Measures

SEQ Area (Program Level)
No mitigation is necessary.

High School Site (Project Level)
Implement Mitigation Measure HYD-4.

Level of Significance After Mitigation

SEQ Area (Program Level)
Less than significant impact.

High School Site (Project Level)
Less than significant impact.