3.3 Air Quality

This section describes existing local and regional air quality conditions; summarizes applicable air quality regulations at the federal, state, and local levels; and analyzes potential air quality impacts attributable to the proposed project. Cumulative impacts on air quality are addressed in Chapter 4, "Cumulative Impacts." Emissions from both stationary and mobile sources were estimated using the California Emission Estimator Model (CalEEMod), Version 2016.3.2. The results of this modeling are provided in Appendix B to this EIR.

3.3.1 Environmental Setting

3.3.1.1 Topography, Climate, and Meteorology

Air quality is defined by the concentration of pollutants relative to their impact on human health. Ambient concentrations of air pollutants are determined by the amount of emissions released by pollutant sources and the ability of the atmosphere to transport and dilute such emissions. Terrain, wind, atmospheric stability, and the presence of sunlight all affect transport and dilution. Therefore, existing air quality in the project area is influenced by topography, meteorology, and climate, in addition to the amount of emissions released by existing air pollutant sources (discussed separately below).

The project site is in the town of Loomis, in Placer County. Placer County lies within multiple air basins: the Sacramento Valley Air Basin (SVAB), Mountain Counties Air Basin, and Lake Tahoe Air Basin. The project site is within the SVAB. In general, the SVAB is relatively flat and bounded by the north Coast Ranges to the west and the northern Sierra Nevada to the east. Air flows into the SVAB through the Carquinez Strait, the only breach in the western mountain barrier, and moves across the Sacramento–San Joaquin Delta from the San Francisco Bay Area.

The mountain ranges that surround the SVAB reach heights of 6,000 feet or more at their peaks. When meteorological conditions are unfavorable for transport and dilution, the resulting physical barrier to airflow can entrap locally generated air pollutants and pollution that otherwise might have been transported northward on prevailing winds from the Sacramento metropolitan area. Although much of the SVAB is located at an elevation of more than 1,000 feet above sea level, the vast majority of its populace lives and works below that elevation. The valley is often subjected to inversion layers that, coupled with the area's geographic barriers and high summer temperatures, create a high potential for air pollution problems.

Poor air movement occurs most frequently in the fall and winter when high-pressure cells are present over the project area and meteorological conditions are stable. During these periods, the lack of surface winds combines with the reduced vertical flow caused by less surface heating to reduce the influx of air. Surface concentrations of air pollutant emissions are highest when these conditions occur in combination with agricultural burning activities or temperature inversions, which hamper dispersion by creating a ceiling over the area and trapping air pollutants near the ground. The winds and unstable atmospheric conditions associated with the passage of winter storms result in periods of low air pollution and excellent visibility. Precipitation and fog also tend to reduce or limit some pollutant concentrations. However, between winter storms, high pressure and light winds contribute to low-level temperature inversions and stable atmospheric conditions, resulting in the concentration of air pollutants.

May through October is ozone season in the SVAB and is characterized by poor air movement in the mornings and the arrival of the Delta sea breeze from the southwest in the afternoons. In addition, with the longer daylight hours, a larger amount of sunlight is available to fuel photochemical reactions between volatile organic compounds (VOC) and oxides of nitrogen (NO_X), which in turn result in ozone formation.

Typically, the Delta breeze transports air pollutants northward out of the SVAB. However, during approximately half of the time from July to September, a phenomenon known as the Schultz Eddy prevents this from occurring. The Schultz Eddy phenomenon causes winds on the west side of the SVAB to shift to a northerly wind, blowing air pollutants southward back into the SVAB. This phenomenon exacerbates the concentration of air pollutant emissions in the air basin and can contribute to violations of ambient air quality standards.

The region has a Mediterranean climate, characterized by hot, dry summers and cool, rainy winters. The local meteorology of the project area is represented by measurements recorded at Auburn National Climate Data Center Station 040383, approximately 9 miles northeast of the project site. This is the nearest station to the project site within the SVAB that has current data. Normal annual precipitation is approximately 34.39 inches and occurs primarily from November through March (WRCC 2017a). Precipitation during the winter rainy season typically results when air masses move in from the Pacific Ocean and travel across California from west to east. The inland location and surrounding mountains typically prevent the area from experiencing much of the ocean breeze that moderates the temperatures in coastal regions. During July, typically the hottest month of the year, average temperatures range from about 61 degrees Fahrenheit (°F) to 93°F (WRCC 2017a). During January, typically the coldest month of the year, average temperatures range from a minimum of 36.6°F to a maximum of 54.0°F (WRCC 2017a).

Characteristic of the winter months in the SVAB are periods of dense and persistent low-level fog, which are most prevalent between storms. The prevailing winds are moderate in speed and vary from moisture-laden breezes from the south to dry-land flows from the north. The predominant wind direction and speed is from the south at approximately 8 miles per hour, as measured at the Sacramento International Airport (WRCC 2017b, 2017c).

3.3.1.2 Criteria Air Pollutants

The U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (ARB) have identified six air pollutants as being indicators of ambient air quality: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter (PM) with an aerodynamic diameter of 10 micrometers or less (PM_{10}), fine PM with an aerodynamic diameter of 2.5 micrometers or less ($PM_{2.5}$), and lead. Because the ambient air quality standards for these air pollutants are regulated using human health and environmentally based criteria, they are commonly referred to as "criteria air pollutants." Although EPA regulations may not be superseded, both state and local regulations may be more stringent. In general, the State of California's standards, particularly those for ozone and PM (PM_{10} and $PM_{2.5}$), are more stringent than the federal standards. Differences in the standards are generally explained through interpretation of the health-effects studies considered during the standard-setting process.

This section provides a brief description of criteria air pollutants, including their source types and health effects, along with the most current attainment designations and monitoring data for the project area.

Ozone

Ozone is a colorless gas that is odorless at ambient levels. It exists primarily as a beneficial component of the ozone layer in the upper atmosphere (stratosphere), shielding the earth from harmful ultraviolet radiation emitted by the sun, and as a pollutant in the lower atmosphere (troposphere).

Ozone is the primary component of urban smog. It is not emitted directly into the air, but is formed through a series of reactions involving VOC and NO_X in the presence of sunlight. VOC emissions result primarily from incomplete combustion and the evaporation of chemical solvents and fuels. NO_X includes various combinations of nitrogen and oxygen, including nitric oxide, NO_2, and others, typically resulting from the combustion of fuels.

Emissions of both VOCs and NO_X are considered critical to ozone formation; therefore, either VOCs or NO_X can limit the rate of ozone production. When the production rate of NO_X is lower, indicating that NO_X is scarce, the rate of ozone production is NO_X-limited. Under these circumstances, ozone levels could be most effectively reduced by lowering current and future NO_X emissions (from fuel combustion), rather than by lowering VOC emissions. Rural areas tend to be NO_X-limited, while areas with dense urban populations tend to be VOC-limited. Both VOC and NO_X reductions provide ozone benefits in the region, but the Sacramento Federal Nonattainment Area (SFNA) exhibits a NO_X-limited regime; therefore, NO_X reductions are more effective than VOC reductions on a tonnage basis (SMAQMD et al. 2017).

Meteorology and terrain play a major role in ozone formation. Generally, low wind speeds or stagnant air coupled with warm temperatures and clear skies provide the optimum conditions for formation. As a result, summer is generally the peak ozone season. Because of the reaction time involved, peak ozone concentrations often occur far downwind of the precursor emissions. Therefore, ozone is a regional pollutant that often affects large areas. In general, ozone concentrations over or near urban and rural areas reflect an interplay of emissions of ozone precursors, transport, meteorology, and atmospheric chemistry.

Individuals exercising outdoors, children, and people with lung disease, such as asthma and chronic pulmonary lung disease, are considered to be the most susceptible subgroups for ozone effects. Short-term ozone exposure (lasting for a few hours) can result in changes in breathing patterns, reductions in breathing capacity, increased susceptibility to infections, inflammation of lung tissue, and some immunological changes. In recent years, a correlation has also been reported between elevated ambient ozone levels and increases in daily hospital admission rates and mortality

(EPA 2017a). An increased risk of asthma has been found in children who participate in multiple sports and live in communities with high ozone levels.

Emissions of the ozone precursors VOC and NO_X have decreased in the past several years. According to the most recently published edition of ARB's *California Almanac of Emissions and Air Quality*, NO_X and VOC emissions levels in the Sacramento metropolitan area are projected to continue to decrease through 2035, largely because of more stringent motor vehicle standards and cleaner burning fuels, as well as rules for controlling VOC emissions from industrial coating and solvent operations (ARB 2013a).

Carbon Monoxide

CO is a colorless and odorless gas that, in the urban environment, is produced primarily by the incomplete burning of carbon in fuels, primarily from mobile (transportation) sources. As of the 2014 EPA National Emissions Inventory, more than 50 percent of the nationwide CO emissions were from mobile sources (EPA 2018a). The remaining emissions are primarily from fires (both wildfires and prescribed fires), releases from vegetation and soil, wood-burning stoves, incinerators, and industrial sources. Relatively high concentrations are typically found near crowded intersections and along heavily used roadways carrying slow-moving traffic. Even under the most severe meteorological and traffic conditions, high concentrations of CO are limited to locations within a relatively short distance (300–600 feet) of heavily traveled roadways. Vehicular traffic emissions can cause localized CO impacts, and severe vehicle congestion at major signalized intersections can generate elevated CO levels, called "hot spots," which can be hazardous to human receptors adjacent to the intersections. Overall, CO emissions are decreasing, in part because the Federal Motor Vehicle Control Program has mandated increasingly lower emission levels for vehicles manufactured since 1973.

CO enters the bloodstream through the lungs by combining with hemoglobin, which normally supplies oxygen to the cells. However, CO combines with hemoglobin much more readily than oxygen does, drastically reducing the amount of oxygen available to the cells. Adverse health effects from exposure to high CO concentrations, which typically can occur only indoors or within similarly enclosed spaces, include dizziness, headaches, and fatigue. CO exposure is especially harmful to individuals who suffer from cardiovascular and respiratory diseases (EPA 2017b).

Nitrogen Dioxide

NO_2 is one of a group of highly reactive gases known as oxides of nitrogen, or NO_X. NO_2 is formed when ozone reacts with nitric oxide (i.e., NO) in the atmosphere and is listed as a criteria pollutant because NO_2 is the more toxic than nitric oxide. The major human-made sources of NO_2 are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines. The combined emissions of nitric oxide and NO_2 are referred to as NO_X and reported as equivalent NO_2. Because NO_2 is formed and depleted by reactions associated with ozone, the NO_2 concentration in a geographical area may not be representative of local NO_X emission sources. NO_X also reacts with water, oxygen, and other chemicals to form nitric acids, contributing to the formation of acid rain.

Inhalation is the most common route of exposure to NO_2. Breathing air with a high concentration of NO_2 can lead to respiratory illness. Short-term exposure can aggravate respiratory diseases, particularly asthma, resulting in respiratory symptoms (such as coughing, wheezing, or difficulty breathing), hospital admissions, and visits to emergency rooms. Longer exposures to elevated concentrations of NO_2 may contribute to the development of asthma and potentially increase susceptibility to respiratory infections. Larger decreases in lung functions are observed in individuals with asthma or chronic obstructive pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these subgroups (EPA 2017c).

Sulfur Dioxide

SO_2 is one component of the larger group of gaseous oxides of sulfur (SO_X). SO_2 is used as the indicator for the larger group of SO_X, as it is the component of greatest concern and found in the atmosphere at much higher concentrations than other gaseous SO_X. SO_2 is typically produced by such stationary sources as coal and oil combustion facilities, steel mills, refineries, and pulp and paper mills. The major adverse health effects associated with SO_2 exposure pertain to the upper respiratory tract. On contact with the moist mucous membranes, SO_2 produces sulfurous acid, a direct irritant. Concentration rather than duration of exposure is an important determinant of respiratory effects. Children, the elderly, and those who suffer from asthma are particularly sensitive to effects of SO_2 (EPA 2017d).

SO_2 also reacts with water, oxygen, and other chemicals to form sulfuric acids, contributing to the formation of acid rain. SO_2 emissions that lead to high concentrations of SO_2 in the air generally also lead to the formation of other

SO_X, which can react with other compounds in the atmosphere to form small particles, contributing to particulate matter pollution, which can have health effects of its own.

Particulate Matter

PM is a complex mixture of extremely small particles and liquid droplets made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles. Natural sources of particulates include windblown dust and ocean spray. The major areawide sources of $PM_{2.5}$ and PM_{10} are fugitive dust, especially from roadways, agricultural operations, and construction and demolition. Other sources of PM_{10} include crushing or grinding operations. $PM_{2.5}$ sources also include all types of combustion, including motor vehicles, power plants, residential wood burning, forest fires, agricultural burning, and some industrial processes. Exhaust emissions from mobile sources contribute only a very small portion of directly emitted $PM_{2.5}$ and PM_{10} emissions; however, they are a major source of VOCs and NO_X, which undergo reactions in the atmosphere to form PM, known as secondary particles. These secondary particles make up the majority of PM pollution.

The size of PM is directly linked to its potential for causing health problems. EPA is concerned about particles that are 10 micrometers in diameter or smaller, because these particles generally pass through the throat and nose and enter the lungs. Once inhaled, these particles can affect the heart and lungs and cause serious health effects, even death. The adverse health effects of PM_{10} depend on the specific composition of the particulate matter. For example, health effects may be associated with metals, polycyclic aromatic hydrocarbons, and other toxic substances adsorbed onto fine PM (referred to as the “piggybacking effect”), or with fine dust particles of silica or asbestos. Effects from short- and long-term exposure to elevated concentrations of PM_{10} include respiratory symptoms, aggravation of respiratory and cardiovascular diseases, a weakened immune system, and cancer (WHO 2016). $PM_{2.5}$ poses an increased health risk because these very small particles can be inhaled deep in the lungs and may contain substances that are particularly harmful to human health.

Direct emissions of $PM_{2.5}$ in the Sacramento metropolitan area decreased between 2000 and 2010, but are projected to increase very slightly through 2035. Similarly, emissions of diesel PM (DPM) decreased from 2000 through 2010 because of reduced exhaust emissions from diesel mobile sources; these emissions are anticipated to continue to decline through 2035 (ARB 2013a).

Lead

Lead is a highly toxic metal that may cause a range of human health effects. Lead is found naturally in the environment and is used in manufactured products. Previously, the lead used in gasoline anti-knock additives represented a major source of lead emissions to the atmosphere. Soon after its inception, EPA began working to reduce lead emissions, issuing the first reduction standards in 1973. Lead emissions have decreased substantially as a result of the near-elimination of leaded gasoline use. Metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers. Although the ambient lead standards are no longer violated, lead emissions from stationary sources still pose “hot spot” problems in some areas. As a result, ARB has identified lead as a toxic air contaminant (TAC).

Fetuses, infants, and children are more sensitive than others to the adverse effects of lead exposure. Exposure to low levels of lead can adversely affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotients. In adults, increased lead levels are associated with increased blood pressure. Lead poisoning can cause anemia, lethargy, seizures, and death, although it appears that lead does not directly affect the respiratory system.

Monitoring Station Data and Attainment Area Designations

Health-based air quality standards have been established for criteria pollutants by EPA at the national level and ARB at the state level. These standards were established to protect the public with a margin of safety from adverse health impacts caused by exposure to air pollution. In addition to criteria pollutants, California has established standards for sulfates, visibility-reducing particles, hydrogen sulfide, and vinyl chloride.

Table 3.3-1 presents the national ambient air quality standards (NAAQS) and the California ambient air quality standards (CAAQS). These health-based pollutant standards are reviewed with a legally prescribed frequency and are revised, as warranted by new data on health and welfare effects. Each standard is based on a specific averaging time over which the concentration is measured. Different averaging times are based on protection from short-term, high-dosage effects or longer term, low-dosage effects. NAAQS may be exceeded no more than once per year; CAAQS are not to be exceeded.

Table 3.3-1. National and California Ambient Air Quality Standards

		California Standards [a]	National Standards [b]	
Pollutant	**Averaging Time**	**Concentration [c]**	**Primary [c,d]**	**Secondary [c,e]**
Ozone [f]	1 hour	0.09 ppm (180 μg/m^3)	–	Same as primary standard
	8 hours	0.070 ppm (137 μg/m^3)	0.070 ppm (147 μg/m^3)	
Respirable particulate matter—10 micrometers or less [g]	24 hours	50 μg/m^3	150 μg/m^3	Same as primary standard
	Annual arithmetic mean	20 μg/m^3	–	
Fine particulate matter—2.5 micrometers or less [g]	24 hours	–	35 μg/m^3	Same as primary standard
	Annual arithmetic mean	12 μg/m^3	12 μg/m^3	15 μg/m
Carbon monoxide	8 hours	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	None
	1 hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	
	8 hours (Lake Tahoe)	6 ppm (7 mg/m^3)	–	–
Nitrogen dioxide [h]	Annual arithmetic mean	0.030 ppm (57 μg/m^3)	0.053 ppm (100 μg/m^3)	Same as primary standard
	1 hour	0.18 ppm (339 μg/m^3)	100 ppb (188 μg/m^3)	None
Sulfur dioxide [i]	Annual arithmetic Mean	–	0.030 ppm (for certain areas) [i]	–
	24 hours	0.04 ppm (105 μg/m^3)	0.14 ppm (for certain areas) [i]	–
	3 hours	–	–	0.5 ppm (1,300 μg/m^3)
	1 hour	0.25 ppm (655 μg/m^3)	75 ppb (196 μg/m^3)	–
Lead [j,k]	30-day average	1.5 μg/m^3	–	–
	Calendar quarter	–	1.5 μg/m^3 (for certain areas) [j]	Same as primary standard
	Rolling 3-month average	–	0.15 μg/m^3	
Visibility-reducing particles [l]	8 hours	See footnote l	No national standards	
Sulfates	24 hours	25 μg/m^3		
Hydrogen sulfide	1 hour	0.03 ppm (42 μg/m^3)		
Vinyl chloride [j]	24 hours	0.01 ppm (26 μg/m^3)		

Notes: μg/m^3 = micrograms per cubic meter; mg/m^3 = milligrams per cubic meter; ppb = parts per billion; ppm = parts per million

[a] California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, and particulate matter (PM_{10}, $PM_{2.5}$, and visibility-reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[b] National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 μg/m^3 is equal to or less than 1. For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standards.

[c] Concentration expressed first in the units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25 degrees Celsius (°C) and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and reference pressure of 760 torr; "ppm" in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[d] *National Primary Standards:* The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

[e] *National Secondary Standards:* Levels of air quality necessary to protect public welfare from any known or anticipated adverse effects of a pollutant.

[f] On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

[g] On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 μg/m^3 to 12.0 μg/m^3. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 μg/m^3, as was the annual secondary standard of 15 μg/m^3. The existing 24-hour PM_{10} standards (primary and secondary) of 150 μg/m^3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

[h] To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. California standards are in units of ppm. To directly compare the national 1-hour standard to the California standards, the units can be converted from 100 ppb to 0.100 ppm.

[i] On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until 1 year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved. To directly compare the 1-hour national standard to the California standard, the units can be converted to ppm. In this case, the national standard of 75 ppb is identical of 0.075 ppm.

[j] ARB has identified lead and vinyl chloride as toxic air contaminants with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[k] The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 μg/m^3 as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standards are approved.

[l] In 1989, ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and the "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

Source: ARB 2017a

Concentrations of criteria air pollutants are measured at several monitoring stations in the SVAB. Table 3.3-2 summarizes the air quality data from the closest station to the project site, in Roseville on North Sunrise Avenue approximately 6.5 miles southwest of the project site, for the most recent 3 years of complete data (2014–2016). As shown, the 8-hour average ozone concentration exceeded the CAAQS and NAAQS in all 3 monitoring years, as did the 1-hour ozone concentration relative to the CAAQS. The 24-hour average $PM_{2.5}$ NAAQS was not exceeded during any of the past 3 years. The 24-hour average PM_{10} CAAQS was not exceeded at all in the past 3 years, while the NAAQS for 24-hour average PM_{10} was exceeded one time in both 2015 and 2016. No exceedances have been registered for NO_2 near the project site for the last 3 years.

Table 3.3-2. Summary of Data regarding Annual Ambient Air Quality near the Project Site

	2014	2015	2016	2017	2018
Ozone					
Maximum 8-hour average concentration (ppm)	0.086	0.084	0.092	0.089	0.084
Maximum 8-hour average concentration (ppm) (2015/2008 national)	0.087	0.085	0.093	0.088	0.083
Number of days 8-hour standard exceeded (2015/2008 national)	19/10	6/3	20/8	9/4	11/8
Number of days 8-hour standard exceeded (state)	21	6	21	10	11
Maximum 1-hour concentration (ppm) (state)	0.097	0.098	0.115	0.117	0.110
Number of days 1-hour standard exceeded (state)	4	1	5	4	4
Carbon Monoxide [a]					
Not available					
Nitrogen Dioxide					
Maximum 1-hour concentration (ppm) (state/national)	54.0/54.1	50.0/50.8	50.0/50.0	52/52.8	54/54.4
Number of days state standard exceeded (state/national)	0/0	0/0	0/0	0/0	0/0
Annual average (ppm)	8	8	8	7	7
Sulfur Dioxide [b]					
Not available					
Fine Particulate Matter—2.5 Micrometers or Less					
Maximum 24-hour average concentration (µg/m^3) (state/national)[c]	30.7/22.2	44.1/29.1	24.4/21.2	28.8/27.8	172.8/171.8
Number of days national standard exceeded (measured/estimated)[d]	0/0	0/0	0/0	0/0	3/17
State annual average (µg/m^3)	10.5	8.1	6.9	7.4	12.2
Respirable Particulate Matter—10 Micrometers or Less					
Maximum 24-hour concentration (µg/m^3) (state/national)[c]	31.8/30.2	59.1/35.7	39.1/39.2	65.8/66.0	211.3/202.2
Number of days state standard exceeded (measured/estimated)[d]	0/0	0/–	0/0	5/–	16/–
Number of days national standard exceeded (measured/estimated)[d]	0/0	1/–	1/–	0/0	2/2
Annual average (state/national)[c]	18.0/17.9	–/13.0	–/15.8	–/–	–/–

Notes: — = data not available; µg/m^3 = micrograms per cubic meter; ppm = parts per million

[a] Carbon monoxide is not currently monitored at any station in the Sacramento Valley Air Basin (SVAB). The highest recorded carbon monoxide concentration in the last 10 years was 1.94 ppm in 2009, which is approximately 22% of the 8-hour standard.

[b] Since 2013, sulfur dioxide has not been monitored at any station in the SVAB.

[c] State and national statistics may differ for the following reasons: State statistics are based on California-approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. State and national statistics may therefore be based on different samplers. State statistics are based on local conditions while national statistics are based on standard conditions. The State of California generally uses more stringent criteria than the U.S. government for ensuring that data are sufficiently complete for calculating valid annual averages.

[d] Measured days are those days on which an actual measurement was greater than the level of the state daily standard or the national daily standard. Measurements are typically collected every 6 days. The number of estimated days represents a mathematical estimate of those days on which concentrations would have been greater than the level of the standard, had monitoring occurred on each day. The number of days above the standard is not necessarily the number of violations of the standard for the year.

Source: ARB 2017b

Monitoring stations in the SVAB have not monitored for CO or SO_2 in the past 5 years. However, monitoring data are available for both CO and SO_2 for 2012 and prior years. Monitoring data are available for CO from the North Highlands–Blackfoot Way monitoring station, which is approximately 11.5 miles southwest of the project site. These monitoring data show a declining trend in CO concentrations over time. The maximum registered CO concentration in the past 10 years is 1.90, approximately 21 percent of the 8-hour standard. The nearest available monitoring station to the project site with SO_2 data is the Sacramento–Del Paso Manor station, which is approximately 16 miles southwest of the project site. The highest measurement at this site in the past 10 years is 0.004, less than 10 percent of the state 24-hour average standard. Therefore, it is highly unlikely that any exceedances of CO or SO_2 have occurred near the project site in the past 5 years (ARB 2017b).

EPA and ARB use the type of monitoring data presented in Table 3.3-2 to designate attainment status for criteria air pollutants based on the NAAQS and CAAQS, respectively. The purpose of these designations is to identify areas with air quality problems and thereby initiate planning efforts for improvement.

The three basic designation categories are "attainment," "nonattainment," and "unclassified":

- **Attainment:** This designation signifies that pollutant concentrations in the area do not exceed the established standard. In most cases, a maintenance plan is required for a region after it has attained an air quality standard and is designated as an attainment or maintenance area after previously being designated as nonattainment. Maintenance plans are designed to ensure continued compliance with the standard.
- **Nonattainment:** This designation indicates that a pollutant concentration has exceeded the established standard. Nonattainment may differ in severity. To identify the severity of the problem and the extent of planning and actions required to meet the standard, nonattainment areas are assigned a classification that is commensurate with the severity of their air quality problem (e.g., moderate, serious, severe, extreme).
- **Unclassified:** This designation indicates that insufficient data exist to determine attainment or nonattainment.

The California designations also include a subcategory called "nonattainment-transitional," which is given to nonattainment areas that are progressing and nearing attainment.

As shown in Table 3.3-3, the portion of Placer County within the SVAB, where the project site is located, meets the NAAQS for all criteria air pollutants except ozone and the 24-hour average $PM_{2.5}$ standard, and meets the CAAQS for all criteria air pollutants except ozone, PM_{10}, and $PM_{2.5}$.

In October 2017, Placer County Air Pollution Control District (PCAPCD) held a public hearing to consider, and ultimately adopted, the *Sacramento Regional 2008 National Ambient Air Quality Standard 8-Hour Ozone Attainment and Reasonable Further Progress Plan* (Attainment and Progress Plan) (SMAQMD 2017). The Attainment and Progress Plan geographically covers the SFNA, which includes all of Sacramento and Yolo counties, and portions of Placer, El Dorado, Solano, and Sutter counties. The project site is located in the portion of Placer County that lies within the SFNA. The Attainment and Progress Plan documents how the region is meeting requirements under the federal Clean Air Act (CAA) in demonstrating reasonable further progress and attainment of the 2008 NAAQS (PCAPCD 2017a).

On behalf of all air districts that compose the SFNA, the Sacramento Metropolitan Air Quality Management District approved and submitted to ARB in October 2017 the Sacramento Federal Ozone Nonattainment Area Redesignation Substitution Request for the 1-Hour Ozone Standard, which includes all of Sacramento and Yolo counties, and portions of Placer, El Dorado, Solano, and Sutter counties (PCAPCD 2017b).

3.3.1.3 Toxic Air Contaminants

In addition to criteria air pollutants, the U.S. EPA and the California Air Resources Board also regulate hazardous air pollutants, also known as toxic air contaminants (TACs). TACs may be emitted by stationary, area, or mobile sources. Common stationary sources of TAC emissions include gasoline stations, dry cleaners, and diesel backup generators, which are subject to the requirements of local air districts' permits. The other, often more substantial, sources of TAC emissions are motor vehicles on freeways, on high-volume roadways, or in other areas with high numbers of diesel vehicles, such as distribution centers. Off-road mobile sources are also major contributors of toxic air contaminant emissions and include construction equipment, ships, and trains.

Table 3.3-3. Attainment Designations for the Placer County Portion of the Sacramento Valley Air Basin

Pollutant	Federal Standard	California Standard
Ozone[a]	Nonattainment (1-hour) [a]	Nonattainment (1-hour) [b]
	Nonattainment (8-hour) [c]	Nonattainment (8-hour)
Particulate Matter—10 Micrometers or Less	Attainment (24-hour)	Nonattainment (24-hour)
		Nonattainment (annual)
Particulate Matter—2.5 Micrometers or Less	Nonattainment (24-hour)	Nonattainment (annual)
	Attainment (annual)	
Carbon Monoxide	Attainment (1-hour)	Attainment (1-hour)
	Attainment (8-hour)	Attainment (8-hour)
Nitrogen Dioxide	Unclassified (1-hour)	Attainment (1-hour)
	Attainment (annual)	Attainment (annual)
Sulfur Dioxide [d]	Attainment (1-hour)	Attainment (1-hour)
	Attainment (24-hour)	Attainment (24-hour)
	Attainment (annual)	–
Lead	Attainment (3-month rolling average)	Attainment (30-day average)
Hydrogen Sulfide	No Federal Standard	Unclassified (1-hour)
Sulfates		Attainment (24-hour)
Visibility-Reducing Particles		Unclassified (8-hour)

Notes:

[a] Air quality meets the federal 1-hour ozone standard (77 *Federal Register* 64036, October 18, 2012). The U.S. Environmental Protection Agency (EPA) revoked this standard, but some associated requirements still apply. The Sacramento Metropolitan Air Quality Management District attained the standard in 2009, and has requested that EPA recognize attainment to fulfill the requirements.

[b] Per Health and Safety Code Section 40921.5(c), the classification is based on 1989–1991 data, and therefore does not change.

[c] 2008 standard.

[d] Cannot be classified.

Source: PCAPCD 2017c

The term TAC collectively refers to a diverse group of air pollutants that may cause or contribute to an increase in chronic (i.e., long-duration) and acute (i.e., severe but short-term) adverse effects on human health. There are hundreds of different types of toxic air contaminants with varying degrees of toxicity. The health risks of individual toxic air contaminants vary greatly; at a given level of exposure, one toxic air contaminant may pose a hazard that is many times greater than another. TACs are usually present in minute quantities in the ambient air; however, their toxicity or health risk may pose a threat to public health even at low concentrations. TACs can be separated into carcinogens and noncarcinogens, based on the nature of the effects associated with exposure to the pollutant. For regulatory purposes, carcinogens are assumed to have no safe threshold below which health impacts would not occur. Noncarcinogens differ in that there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis. According to the *California Almanac of Emissions and Air Quality* (ARB 2009), most of the estimated health risk from TACs can be attributed to relatively few compounds, the most important being particulate matter from diesel-fueled engines (i.e., DPM). Other TACs for which data are available that pose the greatest existing ambient risk in California are benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene.

DPM differs from other TACs because it is not a single substance, but a complex mixture of hundreds of substances. Although DPM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, type of lubricating oil, and presence or absence of an emission control system. Unlike the other TACs, no ambient monitoring data are available for DPM because no routine measurement method currently exists. However, emissions of DPM are forecasted to decline; it is estimated that emissions of DPM in 2035 will be less than half those in 2010, further reducing statewide cancer risk and non-cancer health effects (ARB 2016a).

3.3.1.4 Odors

The ability to detect odors varies considerably among the population and is subjective. Some individuals can smell minute quantities of specific substances while others may not have the same sensitivity but may be sensitive to odors of other substances. In addition, people may have different reactions to the same odor; an odor that is offensive to one person (e.g., from a fast-food restaurant or bakery) may be perfectly acceptable to another. Unfamiliar odors may be more easily detected and likely to cause complaints than familiar ones.

Several examples of common land use types that generate substantial odors are wastewater treatment plants, landfills, composting/green waste facilities, recycling facilities, petroleum refineries, chemical manufacturing plants, painting/coating operations, rendering plants, and food packaging plants. In addition, odors can be caused by agricultural activities, such as dairy operations; horse, cattle, or sheep (livestock) grazing; fertilizer use; and aerial crop spraying.

Offensive odors can affect human health in several ways. First, odorant compounds can irritate the eye, nose, and throat, which can reduce respiratory volume. Second, the VOCs that cause odors can stimulate sensory nerves to cause neurochemical changes that might influence health, for instance, by compromising the immune system. Finally, unpleasant odors can trigger memories or attitudes linked to unpleasant odors, causing cognitive and emotional effects, such as stress.

3.3.1.5 Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others, because of the types of population groups or activities involved. Children, pregnant women, the elderly, those with existing health conditions, and athletes or others who engage in frequent exercise are especially vulnerable to the effects of air pollution. Accordingly, land uses that are typically considered sensitive receptors include schools, daycare centers, parks and playgrounds, and medical facilities.

Residential areas are considered sensitive to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to the pollutants present. Recreational land uses are considered moderately sensitive to air pollution. Exercise places a high demand on respiratory functions, which can be impaired by air pollution, even though exposure periods during exercise are generally short. In addition, noticeable air pollution can detract from the enjoyment of recreation. Industrial and commercial areas are considered the least sensitive to air pollution. Exposure periods are relatively short and intermittent as the majority of the workers tend to stay indoors most of the time.

The project site is adjacent to residential and commercial buildings. Multi-family dwelling units are located north of the project site with single-family homes located to the east of the project site. The nearest sensitive receptors are within the multi-family units to the north (situated south of Brace Road, between Starlight Lane and Sierra College Boulevard) and single-family homes to the east (along Hunters Drive), both located approximately 50 feet from of the project site boundary.

3.3.2 Regulatory Setting

EPA, ARB, and PCAPCD are responsible for regulating air quality in the vicinity of the project site. Each agency develops rules, regulations, policies, and/or goals to comply with applicable legislation. Although EPA regulations may not be superseded, in general, both state and local regulations are more stringent. The regulatory frameworks for criteria air pollutants, TACs, and odor emissions are described separately below.

3.3.2.1 Criteria Air Pollutants

Federal Plans, Policies, Regulations, and Laws

The primary legislation that governs federal air quality regulations is the Clean Air Act, enacted in 1970 and amended by Congress most recently in 1990. The CAA delegates primary responsibility for clean air to EPA. EPA develops rules and regulations to preserve and improve air quality and delegates specific responsibilities to state and local agencies.

Under the CAA, EPA has established the NAAQS for seven potential air pollutants: CO, ozone, NO_2, PM_{10} and $PM_{2.5}$, SO_2, and lead (as shown above in Table 3.3-1). The purpose of the NAAQS is two-tiered: primarily to protect public health, and secondarily to prevent degradation to the environment (i.e., impairment of visibility, damage to vegetation and property).

The CAA also requires each state to prepare an air quality control plan, referred to as a state implementation plan (SIP). The federal Clean Air Act Amendments of 1990 (CAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is modified periodically to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins, as reported by their jurisdictional agencies. EPA is responsible for reviewing all SIPs to determine whether they conform to the mandates of the CAA and its amendments and to determine whether implementing them will achieve ambient air quality standards. If EPA determines a SIP to be inadequate, a federal implementation plan that imposes additional control measures may be prepared for the nonattainment area.

State Plans, Policies, Regulations, and Laws

ARB is responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA). The CCAA, adopted in 1988, required ARB to establish CAAQS (as shown above in Table 3.3-1). ARB has also established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particulate matter, in addition to the above-mentioned criteria air pollutants regulated by EPA. In most cases, the CAAQS are more stringent than the NAAQS. Differences in the standards are generally explained by the health effects studies considered during the standard-setting process and the interpretation of the studies. In addition, the CAAQS incorporate a margin of safety to protect sensitive individuals. The CCAA requires that all air districts in the state endeavor to achieve and maintain the CAAQS by the earliest practicable date. The act specifies that local air districts should focus particular attention on reducing the emissions from transportation and areawide emission sources and provides districts with the authority to regulate indirect sources.

ARB is the lead agency for developing the SIP in California. Air districts and other agencies prepare air quality attainment plans or air quality management plans, and submit them to ARB for review, approval, and incorporation into the applicable SIP. ARB also maintains air quality monitoring stations throughout the state in conjunction with air districts. ARB uses the data collected at these stations to classify air basins as being in attainment or nonattainment with respect to each pollutant and to monitor progress in attaining air quality standards.

ARB has established emission standards for vehicles sold in California and for various types of equipment. California gasoline specifications are governed by both state and federal agencies, which have imposed numerous requirements on the production and sale of gasoline in California during the past 15 years. In December 2004, ARB adopted a fourth phase of emission standards (Tier 4) in the Clean Air Non-road Diesel Rule that are nearly identical to those finalized by EPA earlier that year. The standards required engine manufacturers to meet after-treatment–based exhaust standards for NO_X and PM, starting in 2011, that were more than 90 percent lower than current levels, putting emissions from off-road engines virtually on par with those from on-road, heavy-duty diesel engines. ARB has also adopted control measures for DPM and more stringent emissions standards for various on-road mobile sources of emissions, including transit buses and off-road diesel equipment (e.g., tractors, generators).

California's adopted 2007 *State Strategy for the State Implementation Plan for Federal $PM_{2.5}$ and 8-Hour Ozone Standards* (2007 SIP) was submitted to EPA in November 2007 as a revision to the SIP (ARB 2017c). In July 2011, ARB approved revisions to the 2007 SIP that updated the ARB rulemaking calendar, made adjustments to transportation conformity budgets, revised reasonable further progress tables and made associated reductions for contingency purposes, and updated actions to identify advanced emission control technologies (ARB 2017c). In 2008, EPA strengthened the 8-hour ozone standard to 75 parts per billion (ppb), and again further strengthened this standard in 2015 down to 70 ppb. Sixteen areas in California were designated nonattainment in 2012. In 2012, EPA also strengthened the annual fine particulate matter ($PM_{2.5}$) standard to 12 micrograms per cubic meter ($\mu g/m^3$) and designated four areas in California as nonattainment for this standard. ARB released the *Revised Proposed 2016 State Strategy for the State Implementation Plan*, describing the proposed commitment to achieve the reductions necessary from mobile sources, fuels, and consumer products to meet federal ozone and $PM_{2.5}$ standards over the next 15 years (ARB 2017c).

Regional and Local Plans, Policies, Regulations, and Ordinances

Placer County Air Pollution Control District

PCAPCD attains and maintains air quality conditions in Placer County through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. PCAPCD inspects stationary sources of air pollution, responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements programs and regulations required by the CAA, CAAA, and CCAA. The clean-air strategy of PCAPCD includes preparing plans and programs for the attainment of ambient air quality standards, adopting and enforcing rules and regulations concerning sources of air pollution, and issuing permits for stationary sources of air pollution. The rules and regulations include procedures and requirements to control the emission of pollutants and to prevent adverse impacts.

All projects within PCAPCD's jurisdictional area are subject to PCAPCD rules and regulations in effect at the time of construction. Specific PCAPCD rules that could be applicable to the proposed project may include but are not limited to the following:

- Rule 205: Nuisance. A developer and proposed project cannot emit any quantities of air contaminants or other materials that would cause injury, detriment, nuisance, or annoyance to any considerable number of persons or the public; or that would endanger the comfort, repose, health, or safety of any persons or the public; or that would cause or have natural tendency to cause injury or damage to business or property.
- Rule 212: Storage of Organic Liquids. To limit emissions from storage tanks for organic liquids, any facility where organic liquids having a vapor pressure greater than 25.8 mm Hg [millimeters of mercury] (0.5 psi [pound per square inch]) are placed, stored, or held in any stationary tank, reservoir or other bulk container shall comply with the provisions of this rule.
- Rule 213: Gasoline Transfer into Stationary Storage Containers. The operation shall comply with the provisions of this rule for the transfer of fuel from any tank truck or trailer into any stationary storage container with a capacity of more than 250 gallons.
- Rule 214: Transfer of Gasoline into Vehicle Fuel Tanks. The operation shall comply with the provisions of this rule for the transfer of fuel from any stationary storage tank into any motor vehicle fuel tank.
- Rule 217: Cutback and Emulsified Asphalt Paving Materials. The developer or contractor is required to use asphalt paving materials that comply with the VOC content limits specified in the rule.
- Rule 218: Architectural Coatings. The developer or contractor is required to use coatings that comply with the content limits for VOCs specified in the rule.
- Rule 228: Fugitive Dust. The developer or contractor is required to control dust emissions from earthmoving activities or any other construction activity to prevent airborne dust from leaving the project site.
- Rule 247: Natural Gas–fired Water Heaters, Small Boilers, and Process Heaters. If a proposed project would install natural gas-fired units (i.e., boilers, steam generators, and process heaters) with a rated heat input capacity greater than or equal to 75,000 Btu [British thermal units] and less than 5 million Btu per hour, the unit is required to comply with the NO_X and CO emissions standards.
- Rule 501: General Permit Requirements. To provide an orderly procedure for the review of new sources of air pollution and modification and operation of existing sources through the issuance of permits. Any project that includes the use of equipment capable of releasing emissions to the atmosphere may be required to obtain permit(s) from PCAPCD before equipment operation.

PCAPCD has also produced the *CEQA Air Quality Handbook*, which outlines guidance for analyzing construction and operational emissions from land use projects. PCAPCD also includes a list of analysis expectations and methodologies for CEQA analyses. On October 13, 2016, the PCAPCD Board of Directors adopted the *Review of Land Use Projects under CEQA Policy*, which includes recommendations for thresholds of significance for criteria air pollutant emissions. In developing the thresholds, PCAPCD took into account health-based air quality standards and the strategies to attain air quality standards, historical CEQA project review data in Placer County, and the geographic and land use features of Placer County. PCAPCD's emissions thresholds of significance are discussed further below in Section 3.3.3.2, "Thresholds of Significance."

Town of Loomis General Plan

State law requires each city and county to adopt a general plan "for the physical development of the county or city, and any land outside its boundaries which bears relation to its planning" (Government Code Section 65300). The *Town of Loomis General Plan* (Town of Loomis 2001) contains a set of goals, policies, and programs that address important community issues and is the basis for land use and public policy decisions. The Natural Resources and Open Space portion of Section VII, "Conservation of Resources," in the *Town of Loomis General Plan* contains the following air quality policy and measures applicable to the proposed project:

- **Policy 1: Air quality.** Loomis will contribute toward the attainment of State and Federal air quality standards in the Sacramento Valley Air Basin through the following, and other feasible measures.

a. Site preparation and development activities shall incorporate effective measures to minimize dust emissions and the emissions of pollutants by motorized construction equipment and vehicles.

b. During the review of development plans, the Town should require that project proponents conduct their own air quality analysis to determine air quality impacts and potential mitigation measures.

d. Recognizing that trees and other vegetation can provide a biological means of reducing air contaminants, existing trees should be retained and incorporated into project design wherever feasible. The additional planting of a large number of trees along roadways and in parking areas shall be encouraged.

e. The Town shall require carbon monoxide modeling for development projects that, in combination with regionally cumulative traffic increases, would result in a total of 800 or more trips at an affected intersection or cause the level of service to drop to D or lower at the intersection.

…

h. If an initial air quality screening indicates that emissions of any pollutant could exceed 10 pounds per day, the Town shall require such development projects to submit an air quality analysis to Placer County APCD [PCAPCD] for review. Based on the analysis, the Town may require appropriate mitigation measures consistent with the latest version of the AQAP [air quality attainment plan] or other regional thresholds of significance adopted for the air basin.

i. New development shall pay its fair share of the cost to provide alternative transportation systems, including bikeways, pedestrian paths, and bus stop facilities.

j. The Town shall require that new developments dedicate land sufficient for park-and-ride lots, when the location is appropriate for such facilities.

3.3.2.2 Toxic Air Contaminants

Air quality regulations also focus on TACs, known in federal regulations as hazardous air pollutants (HAPs). In general, for those TACs that may cause cancer, there is no concentration that does not present some risk. This contrasts with criteria air pollutants, for which acceptable levels of exposure can be determined and for which the ambient standards have been established. Instead, EPA and ARB regulate HAPs and TACs, respectively, through statutes and regulations that generally require the use of the maximum or best available control technology for toxics (MACT and BACT) to limit emissions. These statutes and regulations, in conjunction with additional rules set forth by PCAPCD, establish the regulatory framework for TACs.

Federal Plans, Policies, Regulations, and Laws

The CAA requires EPA to identify and set national emissions standards for HAPs to protect public health and welfare. Emissions standards are set for what are called “major sources” and “area sources.” Major sources are defined as stationary sources with potential to emit more than 10 tons per year of any HAP or more than 25 tons per year of any combination of HAPs; all other sources are considered area sources. There are two types of emissions standards: those that require application of MACT, and those that are health-risk based and deemed necessary to address the risks that remain after implementation of MACT. For area sources, the MACT standards may be different because of differences in generally available control technology. The CAA also requires EPA to issue vehicle or fuel standards containing reasonable requirements that control toxic emissions of, at a minimum, benzene and formaldehyde. Performance criteria were established to limit mobile-source emissions of toxics.

State Plans, Policies, Regulations, and Laws

TACs in California are regulated primarily through the Tanner Air Toxics Act (Chapter 1047, Statutes of 1983) and the Air Toxics Hot Spots Information and Assessment Act (Assembly Bill 2588; Chapter 1252, Statutes of 1987). A total of 243 substances have been designated TACs under California law; they include the 189 (federal) HAPs adopted in accordance with Assembly Bill 2728, which required the state to identify the federal HAPs as TACs to make use of the time and costs the EPA had already invested in evaluating and identifying hazardous/toxic substances. The Air Toxics Hot Spots Information and Assessment Act seeks to identify and evaluate risks from air toxics sources, but does not regulate air toxics emissions. TAC emissions from individual facilities are quantified and prioritized. “High-priority” facilities must perform a health risk assessment and, if specific thresholds are violated, must communicate the results to the public in the form of notices and public meetings. TACs are generally regulated through statutes and rules that require the use of MACT or BACT to limit TAC emissions.

According to the *California Almanac of Emissions and Air Quality* (ARB 2013a), most of the estimated health risk from TACs is attributed to relatively few compounds, the most dominant being DPM. In 2000, ARB approved a comprehensive diesel risk reduction plan to reduce emissions from both new and existing diesel-fueled vehicles and engines. The regulation is anticipated to result in an 85 percent decrease in statewide diesel health risk by 2020 relative to the diesel health risk year in the year 2000 (ARB 2000). Additional regulations apply to new trucks and diesel fuel. Subsequent ARB regulations on diesel emissions include the On-Road Heavy Duty Diesel Vehicle (In-Use) Regulation, the On-Road Heavy Duty (New) Vehicle Program, the In-Use Off-road Diesel Vehicle Regulation, and the New Off-road Compression Ignition Diesel Engines and Equipment Program. All of these regulations and programs have timetables by which manufacturers must comply and existing operators must upgrade their diesel-powered equipment.

The *Air Quality and Land Use Handbook: A Community Health Perspective*, published by ARB, provides guidance on land use compatibility with sources of TACs (ARB 2005). The handbook is not a law or adopted policy but offers advisory recommendations for the siting of sensitive receptors near uses associated with TACs, such as freeways and high-traffic roads, commercial distribution centers, rail yards, ports, refineries, dry cleaners, gasoline stations, and industrial facilities. Since the 2005 publication of the Handbook, ARB also published a Technical Advisory as a supplement to the Handbook to provide information on scientifically based strategies to reduce exposure to emissions near high-volume roadways in order to protect public health (ARB 2017a). This Technical Advisory demonstrates that reduced exposure to traffic-related pollution can be achieved while pursuing infill development that independently provides public health benefits. The Technical Advisory identifies strategies to reduce air pollution exposure near roadways, including those that reduce vehicular emissions, such as incorporation of roundabouts for speed reduction, traffic signal management, and speed limit reductions on high-speed roadways (those greater than 55 miles per hour); strategies that reduce the concentrations of traffic pollution, such as urban design that promotes air flow, solid barriers to pollution, and vegetation to reduce pollutant concentrations; and strategies that remove pollution from indoor air such as through high efficiency filtration. This Technical Advisory does not negate the ARB Handbook but offers multiple variables for consideration for land use, transportation, and environmental planning and development.

The State of California has also implemented regulations to reduce DPM emissions. Two such regulations applicable to the proposed project include Title 13, Sections 2485 and 2449, of the California Code of Regulations, which limit idling time to a maximum of 5 minutes for heavy-duty commercial diesel vehicles (defined as diesel vehicles heavier than 10,000 pounds gross vehicle rated weight) and off-road diesel-fueled construction vehicles, respectively (ARB 2016b). These regulatory measures are driven by the ARB Airborne Toxic Control Measure and subsequent amendments.

Regional and Local Plans, Policies, Regulations, and Ordinances

At the local level, air pollution control or management districts may adopt and enforce ARB control measures. Under PCAPCD Rule 501 (General Permit Requirements), Rule 502 (New Source Review), and Rule 507 (Federal Operating Permit), all sources that could emit TACs must obtain permits from PCAPCD. Permits may be granted to these operations if they are constructed and operated in accordance with applicable regulations, including new-source review standards and air toxics control measures. It is important to note that the air quality permitting process applies only to stationary sources; properties may be exposed to elevated levels of TACs from mobile sources (e.g., freeway traffic) that are not subject to this process or to any requirements regarding implementation of BACT for Toxics. Rather, emissions controls on mobile sources are subject to regulations implemented at the federal and state levels.

3.3.3 Impact Analysis

3.3.3.1 Methodology

The discussion below presents the methods used for the air quality analysis and explains how the significance of the proposed project's air quality impacts was determined. Potential air quality impacts associated with short-term construction and long-term operations were evaluated in accordance with PCAPCD-recommended and ARB-approved methodologies. PCAPCD's significance thresholds serve as a proxy for determining whether the proposed project could violate air quality standards, cause a substantial contribution to an existing or projected air quality violation, and/or conflict with any applicable air quality plan. Appendix B presents the modeling inputs and resultant air emissions estimates.

Construction-related air emissions were modeled using the California Emissions Estimator Model (CalEEMod), Version 2016.3.2, and compared with the applicable thresholds of significance (described) to determine potential impacts. CalEEMod allows the user to input project-specific parameters. In this case, project-specific construction inputs included items such as site acreage and construction schedule. Where project-specific information was not available, default parameters provided by the model were used. Default assumptions provided by the model are typically conservative to avoid underestimating emissions. In addition, to conservatively estimate the maximum daily emissions, construction emissions were modeled based on certain construction activities taking place on-site concurrently, thereby representing the most intensive day of construction for each phase. Construction-related emissions are compared with the applicable PCAPCD thresholds, as described in Section 3.3.3.2 below.

After construction, operation of the warehouse and fueling station would generate air pollutant emissions. CalEEMod was used to estimate these long-term operational emissions, as well as emissions associated with area and energy sources (i.e., natural gas combustion, landscape maintenance, periodic architectural coating, and consumer products). Operational emissions associated with day-to-day activities of the proposed project were quantified using CalEEMod defaults, and project-specific trip generation rates and distances were based on the traffic impact study prepared in support of this EIR. As described below, additional project-generated emissions were estimated for project-related activities not captured within the CalEEMod modeling scenario. The total of all estimated emissions was summed to provide an annual operational emissions estimate for comparison to the PCAPCD thresholds of significance.

The CalEEMod emissions estimates do not include emissions from the fueling station as a stationary source. To account for emissions associated with refueling and spillage processes, emission factors from the CARB Revised Emission Factors Report (ARB 2013b) were used to estimate emissions for the fueling station loading and breathing processes. It was assumed that the annual fuel throughput for the proposed project would be 20 million gallons per year. The estimated air emissions associated with operation of the proposed fueling station were added to those generated by CalEEMod.

Vehicle miles traveled (VMT) estimates, as described in the project's Transportation Impact Analysis, were used to generate project-specific inputs in CalEEMod to estimate project-related air pollutant emission from additional daily customer and employee trips to and from the site. In addition to estimating air pollutant emissions using CalEEMod, emission factors from EMFAC2017 and OFFROAD2017 were used to estimate emissions from delivery (warehouse goods and fuel) truck trips, as well as on-site idling of delivery trucks and passenger vehicles in queue at the fueling station. Emission factors from OFFROAD 2017 were used to estimate greenhouse gas (GHG) emissions from transport refrigeration units (TRUs) operating on the warehouse goods delivery trucks. It was estimated that up to 13 warehouse delivery trucks would come to the site daily; up to 4 of the 13 warehouse delivery trucks would be equipped with TRUs. Based on the annual fuel throughput of 20,000,000 gallons per year and tanker truck capacity, this analysis assumed 7 fuel delivery trucks would come to the site per day. Idling emission rates are in grams per hour, and emissions were estimated assuming each delivery truck with or without TRUs would idle for up to 5 minutes upon arrival and 5 minutes upon departure, as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations. Finally, mobile operations would include the passenger vehicle queuing at the fueling station. The fueling station design allows for up to 30 vehicles in queue at a time. This analysis assumed the peak-hour queue would have 30 vehicles in queue continuously for the peak-hour time period. The estimated air emissions associated with these mobile operations were added to those estimated by CalEEMod for the additional VMT from customer and employee trips to and from the site. CO impacts were evaluated using the screening-level procedures provided by PCAPCD (2017c).

The impact analysis does not directly evaluate airborne lead. Because regulations require the use of unleaded fuel and prohibit lead in new building materials, neither construction nor future operations of the proposed project would generate lead emissions.

A Health Risk Assessment for the proposed project was performed to evaluate TAC emissions associated with project construction and operations that could affect surrounding sensitive receptors (CAPCOA 2010). The Health Risk Assessment evaluation was based on modeled emissions estimates using CalEEMod, EMFAC, and OFFROAD, as described above. The American Meteorological Society/U.S. EPA Regulatory Model (AERMOD) dispersion model (Version 19191) was used to estimate pollutant concentrations at specific distances from project emission sources using hourly meteorological data. At the direction of PCAPCD, the Sacramento International Airport meteorological station was used. Additional details on this site are described in more detail in Appendix B2 Exposure factors were used to calculate the dose associated with exposure to the estimated unit concentration results obtained using AERMOD. ARB created the HARP2 software to assist in the development of emissions inventories, dispersion modeling, and risk assessment. For this project, HARP2 was used solely to estimate cancer risk via HARP2's Air Dispersion Modeling and Risk Tool (ADMRT), Version 19121; ADMRT was developed to encapsulate the exposure factors and guidance of the 2015 OEHHA Health Risk Assessment (OEHHA, 2015). The Health Risk Assessment evaluated the 30-year cancer risk for resident receptors using the OEHHA-Derived Method. Factors that affect the dose that a receptor would receive include but are not limited to age-specific daily breathing rates as well as exposure time, frequencies, and duration.

Non-cancer health risks for chronic exposure (a one-year average exposure and an 8-hour average chronic non-cancer health impact from repeated 8-hour exposure) and acute exposure (one-hour average) were calculated by HARP2 using the hazard index (HI) approach for the receptors and toxic substances emitted from the project. For each TAC, the hazard quotient (HQ) was calculated by dividing the predicted exposure from the model by the reference exposure level (REL) for the substance. The TAC-specific HQs were then summed to calculate the project total HQ. Because substances may affect different target organ systems, such as the pulmonary or gastrointestinal systems, the HIs were calculated separately for each target organ system, and the highest HI was used to characterize the potential health risks. The cancer potency factors and RELs used are consistent with the current values published by ARB (ARB 2019). The RELs are intended to represent exposure levels below which adverse health effects do not occur. Therefore, a HI below one indicates that the project will not cause adverse health risks.

Lastly, PCAPCD recommends that odor impacts be addressed in a qualitative manner. Such an analysis must determine whether the proposed project would result in excessive nuisance odors, as defined in the California Code of Regulations and Health and Safety Code Section 41700, "Air Quality Public Nuisance."

3.3.3.2 Thresholds of Significance

An air quality impact would be considered significant if it would exceed any of the thresholds of significance listed below, which are based on Appendix G of the State CEQA Guidelines and on PCAPCD's *CEQA Air Quality Handbook* (PCAPCD 2017c). Based on Appendix G of the State CEQA Guidelines, the proposed project would result in a significant impact on air quality if it would:

- conflict with or obstruct implementation of the applicable air quality plan;
- result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard;
- expose sensitive receptors to substantial pollutant concentrations; or
- result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

As stated in Appendix G of the State CEQA Guidelines, the significance criteria established by the applicable air quality management district may be relied on to make the above determinations. Thus, pursuant to the PCAPCD-recommended thresholds (PCAPCD 2017c) for evaluating project-related air quality impacts, the proposed project would result in a significant impact on air quality if it would:

- generate construction-related criteria air pollutant or precursor emissions that exceed the PCAPCD-recommended daily thresholds of 82 pounds per day (lb/day) for VOC, NO_X, or PM_{10};
- generate long-term regional criteria air pollutant or precursor emissions that exceed the PCAPCD-recommended daily thresholds of 55 lb/day of VOC or NO_X, or 82 lb/day of PM_{10};
- generate emissions of toxic air contaminants or $PM_{2.5}$ that would cause an excess cancer risk level of more than 10 in in one million or exceed a Hazard Index of 1; or
- expose sensitive receptors to excessive nuisance odors, as defined under PCAPCD Rule 205. [See "Regional and Local Plans, Policies, Regulations, and Ordinances," in Section 3.3.2.1, "Criteria Air Pollutants," above.]

Because there is considerable overlap between the threshold questions, this section has been organized to address the following topics:

- Short-term, construction-related emissions
- Long-term, operational emissions
- Exposure of sensitive receptors to substantial pollutant concentrations
- Exposure to objectionable odors

Two of the Appendix G checklist questions address conflicts with an air quality plan and contribution to an air quality violation. The criteria air pollutant significance thresholds serve as a proxy for these impacts; therefore, the evaluation of potential conflicts with air quality plans and air quality violations is consolidated.

For cumulative impacts, PCAPCD states that if a project's impacts would be significant at the project level (i.e., would exceed any of the thresholds listed above), it could also be considered significant on a cumulative level. Section 4 of this EIR addresses cumulative impacts in detail.

3.3.3.3 Environmental Impacts and Mitigation Measures

Impact 3.3-1: Generation of Temporary, Short-Term, Construction-Related Emissions of Criteria Pollutants and Precursors. *Short-term construction activities would not generate emissions of criteria air pollutants that would exceed PCAPCD's daily construction emissions thresholds. The impact would be* ***less than significant****.*

Construction emissions are described as "short-term" or temporary in duration, but have the potential to adversely affect air quality. Construction would result in temporary emissions of volatile organic compounds (VOCs), nitrogen oxides (NO_X), and particulate matter (PM). Ozone precursor emissions of VOCs and NO_X are associated primarily with construction equipment exhaust and the application of architectural coatings. PM emissions are associated primarily with fugitive dust generated during site preparation and grading and vary depending on the soil silt content, soil moisture, wind speed, acreage of disturbance, vehicular travel to and from the construction site, and other factors. PM emissions are also generated by equipment exhaust and re-entrained road dust from vehicular travel on paved and unpaved surfaces.

Construction activities would include site preparation (e.g., excavation, grading, and clearing); exhaust emissions from the use of off-road equipment, material delivery, and construction worker commutes; asphalt paving; and application of architectural coatings. Construction is assumed to begin in 2020 and occur over 6 months. Construction phases (grading, base for paving, paving, concrete foundations and slab on grade, building construction, and architectural coating) would all take place consecutively. The site is anticipated to be balanced (i.e., construction would not require the substantial import of fill or removal of excavated material).

Table 3.3-4 summarizes the maximum daily emissions of VOCs, NO_X, and PM_{10} associated with each phase of construction. See Appendix B for model output files and assumptions.[1]

Table 3.3-4. Summary of Modeled Maximum Daily Construction-Related Emissions of Criteria Air Pollutants and Precursors

Portion of Construction Phase	Maximum Daily Emissions (lb/day)		
	VOCs	NO_X	PM_{10}
Rough Grading	6.5	76.1	12.9
Base for Paving	6.8	29.8	1.7
Paving	6.3	19.5	1.2
Concrete Foundation / Slab on Grade	4.2	23.5	1.4
Building Erection	3.8	35.5	3.5
Architectural Coatings	80.0	76.1	12.9
Maximum Daily Emissions	80.0	76.1	12.9
PCAPCD Significance Threshold	82	82	82
Exceeds Threshold?	No	No	No

Notes: lb/day = pounds per day; NO_X = oxides of nitrogen; PCAPCD = Placer County Air Pollution Control District; PM_{10} = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; VOC = volatile organic compound
See Appendix B for detailed modeling assumptions, outputs, and results.

Source: Data compiled by AECOM in 2019

[1] As noted under Impact 3.3-4, there are three options that are analyzed in this EIR related to site access. The short-term criteria air pollutant emissions analysis is of the worst-case option – the one that involves the most potential earth disturbance (Option 1C).

As shown, the modeled daily emissions generated by short-term construction activities would not exceed the PCAPCD-recommended thresholds of significance.

Existing Regulations

Although PM_{10} emissions would not exceed the PCAPCD emissions thresholds, PCAPCD Rule 228, Fugitive Dust, requires a Dust Control Plan for construction and grading activities. Similarly, while not required to meet PCAPCD thresholds of significance, idling restrictions for on-road and off-road construction equipment would be required to comply with ARB regulations and California law developed to address poor air quality in California, of which emissions from heavy-duty vehicles are known to be a major contributor.

California Air Resources Board Idling Restrictions for On-Road and Off-Road Construction Equipment. The construction contractors will be required to minimize idling time of heavy equipment by:

- shutting equipment off when not in use or reducing the time of idling to 5 minutes, as required by Title 13, Sections 2449(d) and 2485 of the California Code of Regulations;
- prohibiting idling within 1,000 feet of sensitive receptors; and
- posting clear signage of this requirement for workers at the entrances to the site and within 1,000 feet of sensitive receptors.

PCAPCD Dust Control Requirements to Reduce Particulate Matter Emissions. The construction contractors will be required to submit a construction emission/dust control plan for approval by PCAPCD before ground disturbance to comply with PCAPCD Rule 202, Visible Emissions, and Rule 228, Fugitive Dust. PCAPCD minimum dust control requirements would include:

- Keep unpaved areas subject to vehicle traffic wet, treated with a chemical dust suppressant, or covered.
- Maintain a maximum speed of 15 miles per hour for any vehicles and equipment traveling across unpaved areas unless the road surface and surrounding area is sufficiently stabilized to prevent vehicles and equipment traveling more than 15 miles per hour from emitting dust exceeding Ringelmann 2 or visible emissions from crossing the project boundary line.
- Stabilize storage piles and disturbed areas not subject to vehicular traffic by keeping them wet, treated with a chemical dust suppressant, or covered when material is not being added to or removed from the pile.
- Before any ground disturbance, including grading, excavating, and land clearing, apply sufficient water to the area to be disturbed to prevent emitting dust exceeding 40 percent opacity and to minimize visible emissions crossing the boundary line.
- Wash down construction vehicles leaving the site to prevent dust, silt, mud, and dirt, from being released or tracked off-site.
- Suspend grading and earthmoving operations when wind speeds are high enough to result in visible dust emissions crossing the boundary line, despite the application of dust mitigation measures.
- Maintain all trucks transporting loose materials such as sand, silt, or dirt to or from the site such that no spillage can occur from holes or other openings in cargo compartments, and ensure that loads are either covered with tarps or wetted and loaded such that the material does not touch the front, back, or sides of the cargo compartment at any point less than 6 inches from the top and that no point of the load extends above the top of the cargo compartment.

Compliance with ARB regulations would further reduce emissions from daily use of heavy-duty construction equipment. Implementation of the PCAPCD dust control requirements and enhanced exhaust control practices, as required by Rule 228 and Rule 202, would also reduce emissions of criteria air pollutants from short-term construction activities, including reducing NO_X emissions further. PM_{10} emissions are below the PCAPCD emissions thresholds, and application of existing regulations would reduce PM emissions further. The impact would be **less than significant**.

Impact 3.3-2: Generation of Long-Term Operational Emissions of Criteria Pollutants and Precursors. *Long-term operational emissions associated with day-to-day warehouse and fueling station activities would not exceed PCAPCD's thresholds of significance for criteria pollutants and precursors. Thus, operational emissions of criteria air pollutants and precursors would not violate or* *contribute substantially to an existing or projected air quality violation or conflict with air quality planning efforts. This impact would be **less than significant**.*

Daily activities associated with long-term operations of the proposed warehouse and fueling station would generate criteria air pollutant emissions and precursors from mobile, energy, and area sources. Mobile sources include vehicular trips to and from the project site. Area sources include consumer products (i.e., cleaning supplies, kitchen aerosols, toiletries), natural gas combustion for water and space heating, landscape maintenance equipment, and periodic architectural coatings. Construction emissions are considered short term and temporary, but operational emissions are considered long term and would occur for the lifetime of the project. Therefore, operational emissions have greater potential to affect the attainment status of an air basin, particularly as a result of increased traffic. For the proposed project, emission sources include gas venting from loading and breathing processes associated with the fueling station, as well as on-site idling of delivery trucks (warehouse goods and fuel) and associated TRUs as well as passenger vehicles idling while in the queue line at the fueling station. The proposed warehouse and fueling station total operational emissions are shown in Table 3.3-5. See Appendix B1 for model output files and assumptions.

As shown in Table 3.3-5, the proposed project's total daily operational emissions would not exceed PCAPCD's thresholds of significance.

The PCAPCD thresholds of significance are considered the allowable amount of emissions each project can generate without conflicting with or obstructing implementation of the applicable air quality plans developed to maintain and attain ambient air quality standards (PCAPCD 2016). The proposed project would not generate long-term operational emissions that would exceed the PCAPCD thresholds, and thus, would not conflict with or obstruct implementation of any applicable air quality plan. This impact would be **less than significant**.

Table 3.3-5. Summary of Modeled Maximum Daily Long-Term Operational Emissions of Criteria Air Pollutants and Precursors [a]

Emissions Source	Daily Emissions (lb/day)		
	VOC	NO_X	PM_{10}
Area	4.00	0.00092	0.00036
Energy	0.06	0.51	0.04
Mobile [b]	5.03	36.76	12.19
Evaporative (from fueling center operations)	28.05	0.00	0.00
Total Daily Operational Emissions [c]	**37**	**37**	**12**
PCAPCD Thresholds of Significance	**55**	**55**	**82**
Exceeds Thresholds?	**No**	**No**	**No**

Notes:

lb/day = pounds per day; NO_X = oxides of nitrogen; PCAPCD = Placer County Air Pollution Control District; PM_{10} = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; TRUs = transport refrigeration units; VOC = volatile organic compound

See Appendix B for detailed modeling assumptions, outputs, and results. The trip rates and lengths in CalEEMod were adjusted so that the total net travel demand (vehicle miles traveled, or "VMT") matches the project-specific estimates and delivery and queuing-related emissions were estimated outside of CalEEMod.

[a] Operational emissions were modeled for year 2020.

[b] Mobile emissions include those from daily customer and worker trips, daily trips and on-site idling of warehouse and fueling center delivery trucks and associated TRUs, and idling of vehicles in queue at the fueling center.

[c] Total emissions may not add correctly due to rounding.

Source: Data compiled by AECOM in 2019

Impact 3.3-3: Generation of Local Mobile-Source Carbon Monoxide Emissions. *Operational CO emissions associated with day-to-day warehouse and fueling station activities would not result in or substantially contribute to CO concentrations that would exceed the California 1-hour ambient-air quality standard of 20 ppm or the 8-hour standard of 9.0 ppm. Therefore, this impact would be **less than significant**.*

CO concentration is a direct function of vehicle idling time, and thus, traffic flow conditions. Under stagnant meteorological conditions, CO concentrations near congested roadways and/or intersections may reach unhealthy levels that adversely affect nearby sensitive land uses.

The *Town of Loomis General Plan* contains an air quality policy and measures intended to serve as the basis for land use and public policy decisions. Included in the policy is a recommended threshold for determining the need for further analysis of potential impacts from CO emissions related to mobile-source operations. The intent of this policy is to identify the potential for, and avoid adverse impacts related to CO, particularly as a result of increased traffic. One way to do this has been to use dispersion modeling to quantify CO concentrations likely to result from projects or at high-volume intersections or along high-volume roadways. However, since this policy was developed, CO emissions have decreased, in part because the Federal Motor Vehicle Control Program has mandated increasingly lower emission levels for vehicles manufactured since 1973. Between 2000 and 2016, national average CO concentrations decreased by approximately 61 percent and regional average CO concentrations in the California and Nevada region decreased by approximately 60 percent (EPA 2018b). Accordingly, as mobile emissions standards have become more stringent and CO emissions from vehicles have decreased over time, dispersion modeling for CO is typically no longer necessary for impact assessment. Since the publication of the *Town of Loomis General Plan* in 2001, PCAPCD has published its updated *CEQA Air Quality Handbook* (2017), which provides screening levels for CO impact assessment that are more applicable to today's standards and anticipated potential project impacts. Therefore, with consideration for the changing environment in mobile-source emissions standards and declining trends for CO emissions, local mobile-source CO concentrations were assessed to meet the intent of the General Plan policy but using the more current screening-level procedure provided by PCAPCD (PCAPCD 2017c).

PCAPCD recommends a screening approach to determine whether traffic would cause a potential CO hotspot at affected intersections. A project is identified to have potential CO impacts if:

- the project's CO emissions from vehicle operation would be more than 550 lb/day; ***and***
- traffic generated by the proposed project would result in deterioration of intersection peak-hour level of service (LOS) from an acceptable peak-hour LOS (e.g., A, B, C, or D) to an unacceptable LOS (e.g., E or F); ***or***
- the project would contribute additional traffic that would substantially worsen and already existing unacceptable peak-hour LOS on one or more intersections in the project vicinity. "Substantially worsen" is defined by PCAPCD as a situation where a delay would increase by 10 seconds or more when project-generated traffic is included.

Maximum daily mobile-source operational CO emissions would be approximately 67.69 lb/day. With consideration of on-site idling, total CO emissions from mobile operations plus this on-site idling would be approximately 84.05 lb/day. This would not exceed the PCAPCD screening level of 550 lb/day. Therefore, the proposed project would not exceed the PCAPCD screening-level criteria.

As stated, CO emissions attributable to on-site truck idling were also considered in this analysis. Up to 13 large trucks would deliver goods on a typical weekday, averaging two to three trucks per hour, with most deliveries completed by 10:00 a.m., when the warehouse would open for the day. It is assumed that there will be nine trucks per day without TRUs, and four trucks per day that would include TRUs. In addition, up to seven fuel delivery trucks would be on-site daily, dispersed throughout the day. The loading dock for the Costco warehouse would be located on the southwestern side of the warehouse, away from residential uses located to the north and east of the project site. A smaller on-grade door would be located on the west side of the building to receive bread deliveries and shipments. To reduce idling time, Costco trucks are equipped with engine idle shut-off timers.

Because the proposed project meets PCAPCD's recommended screening criteria, and because delivery truck trips would be dispersed throughout the day and are anticipated to average less than three per hour, the proposed warehouse and fueling station would not violate air quality standards for CO. Therefore, this impact would be **less than significant**.

Impact 3.3-4: Exposure of Sensitive Receptors to Toxic Air Contaminant Emissions. *Construction of the proposed project would generate temporary emissions of TACs from off-road construction equipment, on-road construction worker and vendor vehicles, earthmoving activities, and paving and architectural coating activities. Long-term operations of the proposed project would include daily mobile operations that would generate emissions from diesel-powered delivery trucks and associated TRUs, as well as operation of a fuel dispensing facility that could result in the emissions of TACs, primarily benzene. These emissions could result in the exposure of sensitive receptors to TAC emissions, but exposures would not approach PCAPCD significance thresholds. Therefore, this impact would be* ***less than significant****.*

The exposures of sensitive receptors (e.g., existing off-site residents) to TAC emissions from short-term sources (construction) and long-term operational sources (mobile, stationary, and other sources) are discussed separately below.

The Office of Environmental Health Hazard Assessment developed a Guidance Manual for the Preparation of Health Risk Assessments. According to Office of Environmental Health Hazard Assessment methodology, health effects from carcinogenic toxic air contaminants are usually described in terms of individual cancer risk, which is based on a 30-year lifetime exposure. A Health Risk Assessment was performed in support of this EIR to evaluate the potential for exposure by sensitive receptors to project-generated TACs. Emissions estimates for the proposed project, as described in Section 3.3.3.1, Methodology, and further details included in Appendices B1 and B2 were used to determine concentrations of each pollutant at sensitive receptor locations in order to evaluate the excess cancer risk a receptor is exposed to as a result of the proposed project.

Construction of the proposed project would generate emissions of TACs from a variety of sources, including off-road construction equipment, on-road vehicles, earthmoving activities, architectural coating activities, and paving activities. These activities may expose nearby receptors to TACs, including residents adjacent to the eastern and northern project site boundaries. The greatest potential for TAC emissions during construction would be related to DPM emissions associated with operation of heavy-duty construction equipment. The HRA assumed $PM_{2.5}$ exhaust emissions to be the equivalent of DPM.

Off-road construction equipment was represented by adjacent volume sources covering the footprint of the project site. On-road emissions from construction-worker vehicles, haul trucks, material delivery trucks, and on-site work trucks traveling to and from the project site were also modeled as adjacent volume sources. Table 3.3-6 summarizes the construction emissions used in the HRA.

Table 3.3-6. Unmitigated Construction-Related Emissions (lb/year)

Emissions Source	ROG	Exhaust $PM_{2.5}$
Off-Site (Mobile Vehicles)	52.34	4.10
On-Site (Off-Road Equip/Vehicles)	2,055.20	180.64

Notes: lb/year = pounds per year; $PM_{2.5}$ = particulate matter with aerodynamic diameter less than 2.5 microns; ROG = reactive organic gases

After construction of the proposed project, long-term operations would generate emissions of TACs from a variety of sources, including stationary sources, volume sources, and mobile sources. Operational emission sources evaluated in the dispersion modeling include bulk transfer (loading), pressure driven losses (breathing), fueling/hose permeation and spillage processes associated with the fueling station, along with exhaust from diesel engines powering TRUs and on-road vehicles, idling of delivery trucks, and idling of passenger vehicles in queue at the fueling station. Modeling assumed the on-road emissions from operational vehicles associated with the project site as adjacent volume sources. Modeling assumed loading and breathing processes as point sources, while refueling and spillage were included as adjacent volume sources. It should be noted that the landscaping plan includes the inclusion of trees throughout the parking area and surrounding the site perimeter. The Sacramento Air District funded a study that indicates that trees and other vegetation have been shown to alter pollutant transport and dispersion, reducing pollutant concentrations by 65-85 percent on the leeward (downwind) side of a tree line. As such, there may be a benefit of reduced pollutant concentrations at sensitive receptor locations due to the proposed landscaping. However, this reduction has not been estimated at this planning stage and therefore has not been taken into consideration for the following results. Table 3.3-7 summarizes the mobile operations-related emissions used in the HRA, and Table 3.3-8 summarizes the fueling station emissions used in the HRA.

Table 3.3-7. Unmitigated Mobile Operations-Related Emissions (lb/year)

Emissions Source	ROG	Exhaust $PM_{2.5}$
Diesel Vehicles	-	24.36
Gasoline Vehicles	753.55	-

Notes: lb/year = pounds per year; $PM_{2.5}$ = particulate matter with aerodynamic diameter less than 2.5 microns; ROG = reactive organic gases

Table 3.3-8. Fueling Station Related ROG Emissions (lb/year)

Process	Benzene	Toluene	Xylenes	MTBE
Loading	9.00E+00	3.00E+01	3.00E+01	3.30E+02
Breathing	1.44E+00	4.80E+00	4.80E+00	5.28E+01
Refueling	5.87E+00	1.96E+01	1.96E+01	2.15E+02
Spillage	4.80E+01	3.84E+02	1.15E+02	5.28E+02
Totals	6.43E+01	4.38E+02	1.70E+02	1.13E+03

Notes: lb/year = pounds per year; Annual throughput assumes 20,000,000 gallons of fuel per year.

Health risks were evaluated in terms of cancer and non-cancer risks, where the non-cancer risks are further divided into chronic (long-term and 8-hour) and acute (short-term) risks. There are 3 slightly different configuration scenarios being considered for the project, which only affect secondary vehicle entrance points. The 3 scenarios include the following variations;

- Option 1A – has a second entrance/exit driveway along Brace Road near the northeast corner of the project site;
- Option 1B – does not have a second entrance/exit driveway along Brace Road but does have an entrance/exit connection from the southern portion of project site to Granite Drive; and
- Option 1C – same as Option 1A and includes the entrance/exit connection to Granite Drive.

As a result of the three Project Driveway Access Options of the proposed project, health risks were evaluated for each variation. The results are presented below, with additional details provided in Appendix B2.

Health Risk Results – Option 1A

Table 3.3-9 presents the locations and cancer risks for the off-site maximum exposed individual resident (MEIR) and the maximum exposed individual worker (MEIW) for the proposed project Option 1A scenario. At the MEIR, cancer risk is calculated on a 30-year basis for an adult, and on a 9-year basis for a child, to account for variable residence times. Cancer risk for the MEIW is calculated on a 25-year exposure basis assuming most workers will be present during the same hours as fueling station operation.

Table 3.3-9. Summary of Cancer Risks

Phase	Cancer Risk (per Million)		
	30-Yr Resident (MEIR)[1]	9-Yr (Child)	25-Yr (Worker) (MEIW)[2]
Construction	4.22	4.22	0.12
Operations	2.80	2.05	4.05
Total Cancer Risk	6.98	6.27	4.17
Significance Threshold	10.0	10.0	10.0
Exceed Threshold?	No	No	No

Notes: units are in micrograms per cubic meter.

[1] Maximum exposed individual resident (MEIR) Receptor Location: 655924.60 E, 4297230.73 N

[2] Maximum exposed individual worker (MEIW) Receptor Location: 655864.60 E, 4296930.73 N

Table 3.3-10 presents the locations and chronic non-cancer HI for the Point of Maximum Impact (PMI), the MEIR, and the MEIW.

Table 3.3-10. Summary of Chronic Non-Cancer Risks

Receptor	Location, UTM		Hazard Index
	East (m)	North (m)	
MEIW	655864.60	4296930.73	0.04
MEIR	655924.60	4297231.73	0.01

Notes: m = meter(s); MEIR = Maximum exposed individual resident; MEIW = Maximum exposed individual worker; UTM = Universal Transverse Mercator

Table 3.3-11 presents the locations and 8-hour chronic HIs for the PMI, the MEIR, and the MEIW.

Table 3.3-11. Summary of 8-hour Chronic Non-Cancer Risks

Receptor	Location, UTM		Hazard Index	Significance Threshold	Exceed Threshold?
	East (m)	North (m)			
PMI	655864.60	4296930.73	0.16	1.0	No
MEIW	655864.60	4296930.73	0.15	1.0	No
MEIR	655924.60	4297231.73	0.02	1.0	No

Notes: m = meter(s); MEIR = Maximum exposed individual resident; MEIW = Maximum exposed individual worker; PMI = Point of Maximum Impact ;UTM = Universal Transverse Mercator

Table 3.3-12 presents the locations and acute HI for the PMI, the MEIR, and the MEIW.

Table 3.3-12. Summary of 8-hour Acute Non-Cancer Risks

Receptor	Location, UTM		Hazard Index	Significance Threshold	Exceed Threshold?
	East (m)	North (m)			
PMI	655784.60	4296991	0.26	1.0	No
MEIW	655864.60	4296930.73	0.16	1.0	No
MEIR	656104.60	4296970.73	0.10	1.0	No

Notes: m = meter(s); MEIR = Maximum exposed individual resident; MEIW = Maximum exposed individual worker; PMI = Point of Maximum Impact; UTM = Universal Transverse Mercator

Health Risk Results – Option 1B

Table 3.3-13 presents the locations and cancer risks for the off-site MEIR and the MEIW for the proposed project Option 1B scenario. At the MEIR, cancer risk is calculated on a 30-year basis for an adult, and on a 9-year basis for a child, to account for variable residence times. Cancer risk for the MEIW is calculated on a 25-year exposure basis assuming most workers will be present during the same hours as fueling station operation.

Table 3.3-13. Summary of Cancer Risks

Phase	Cancer Risk (per Million)		
	30-Yr Resident (MEIR)[1]	9-Yr (Child)	25-Yr (Worker) (MEIW)[2]
Construction	3.96	3.96	0.10
Operations	1.67	1.21	3.47
Total Cancer Risk	5.63	5.17	3.57
Significance Threshold	10.0	10.0	10.0
Exceed Threshold?	No	No	No

Notes: units are in micrograms per cubic meter.

[1] Maximum exposed individual resident (MEIR) Receptor Location: 655924.60 E, 4297230.73 N

[2] Maximum exposed individual worker (MEIW) Receptor Location: 655864.60 E, 4296930.73 N

Table 3.3-14 presents the locations and chronic non-cancer HI for the PMI, the MEIR, and the MEIW.

Table 3.3-14. Summary of Chronic Non-Cancer Risks

Receptor	Location, UTM		Hazard Index
	East (m)	North (m)	
MEIW	655864.60	4296930.73	0.04
MEIR	655924.60	4297231.73	0.01

Notes: m = meter(s); MEIR = Maximum exposed individual resident; MEIW = Maximum exposed individual worker; UTM = Universal Transverse Mercator

Table 3.3-15 presents the locations and 8-hour chronic HIs for the PMI, the MEIR, and the MEIW.

Table 3.3-15. Summary of 8-hour Chronic Non-Cancer Risks

Receptor	Location, UTM		Hazard Index	Significance Threshold	Exceed Threshold?
	East (m)	North (m)			
PMI	655864.60	4296930.73	0.16	1.0	No
MEIW	655864.60	4296930.73	0.15	1.0	No
MEIR	655924.60	4297231.73	0.02	1.0	No

Notes: m = meter(s); MEIR = Maximum exposed individual resident; MEIW = Maximum exposed individual worker; PMI = Point of Maximum Impact; UTM = Universal Transverse Mercator

Table 3.3-16 presents the locations and acute HI for the PMI, the MEIR, and the MEIW.

Table 3.3-16. Summary of 8-hour Acute Non-Cancer Risks

Receptor	Location, UTM		Hazard Index	Significance Threshold	Exceed Threshold?
	East (m)	North (m)			
PMI	655784.60	4296990.73	0.25	1.0	No
MEIW	655864.60	4296930.73	0.16	1.0	No
MEIR	656104.60	4296970.73	0.09	1.0	No

Notes: m = meter(s); MEIR = Maximum exposed individual resident; MEIW = Maximum exposed individual worker; PMI = Point of Maximum Impact; UTM = Universal Transverse Mercator

Health Risk Results – Option 1C

Table 3.3-17 presents the locations and cancer risks for the off-site MEIR and the MEIW for the proposed project Option 1C scenario. At the MEIR, cancer risk is calculated on a 30-year basis for an adult, and on a 9-year basis for a child, to account for variable residence times. Cancer risk for the MEIW is calculated on a 25-year exposure basis assuming most workers will be present during the same hours as fueling station operation.

Table 3.3-17. Summary of Cancer Risks

Phase	Cancer Risk (per Million)		
	30-Yr Resident (MEIR)[1]	9-Yr (Child)	25-Yr (Worker) (MEIW)[2]
Construction	3.96	3.96	0.10
Operations	1.73	1.25	3.48
Total Cancer Risk	5.68	5.21	3.58
Significance Threshold	10.0	10.0	10.0
Exceed Threshold?	No	No	No

Notes: units are in micrograms per cubic meter.

[1] Maximum exposed individual resident (MEIR) Receptor Location: 655924.60 E, 4297230.73 N

[2] Maximum exposed individual worker (MEIW) Receptor Location: 655864.60 E, 4296930.73 N

Table 3.3-18 presents the locations and chronic non-cancer HI for the PMI, the MEIR, and the MEIW.

Table 3.3-18. Summary of Chronic Non-Cancer Risks

Receptor	Location, UTM		Hazard Index
	East (m)	North (m)	
MEIW	655864.60	4296930.73	0.04
MEIR	656104.60	4296990.73	0.01

Notes: m = meter(s); MEIR = Maximum exposed individual resident; MEIW = Maximum exposed individual worker; UTM = Universal Transverse Mercator

Table 3.3-19 presents the locations and 8-hour chronic HIs for the PMI, the MEIR, and the MEIW.

Table 3.3-19. Summary of 8-hour Chronic Non-Cancer Risks

Receptor	Location, UTM		Hazard Index	Significance Threshold	Exceed Threshold?
	East (m)	North (m)			
PMI	655864.60	4296930.73	0.16	1.0	No
MEIW	655864.60	4296930.73	0.15	1.0	No
MEIR	655924.60	4297231.73	0.02	1.0	No

Notes: m = meter(s); MEIR = Maximum exposed individual resident; MEIW = Maximum exposed individual worker; PMI = Point of Maximum Impact; UTM = Universal Transverse Mercator

Table 3.3-20 presents the locations and acute HI for the PMI, the MEIR, and the MEIW.

Table 3.3-20. Summary of 8-hour Acute Non-Cancer Risks

Receptor	Location, UTM		Hazard Index	Significance Threshold	Exceed Threshold?
	East (m)	North (m)			
PMI	655784.60	4296990.73	0.25	1.0	No
MEIW	655864.60	4296930.73	0.16	1.0	No
MEIR	656104.60	4296970.73	0.09	1.0	No

Notes: m = meter(s); MEIR = Maximum exposed individual resident; MEIW = Maximum exposed individual worker; PMI = Point of Maximum Impact; UTM = Universal Transverse Mercator

As shown in Tables 3.3-9 through 3.3-20, the proposed project, for all the proposed options, would not expose nearby receptors to levels of TACs that would result in an excess cancer or non-cancer health risks that exceed PCAPCD thresholds. Therefore, the proposed project would not expose sensitive receptors to substantial concentrations of TAC emissions and this impact would be **less than significant.**

However, because the proposed project would involve construction and operation of a fueling station, the project would be required to comply with PCAPCD Rules 213 and 214. In addition, prior to construction and operation of a fueling facility, the proposed project would require an Authority to Construct permit from PCAPCD. Although the proposed project would not exceed the PCAPCD thresholds of significance for cancer risk and HI, the proposed project is still required to comply with applicable PCAPCD Rules and Regulations and permitting requirements.

Existing Regulations

The project is required to comply with existing regulations, including permit conditions associated with an Authority to Construct Permit and Permit to Operate for the proposed fueling station.

> **Obtain an Authority to Construct (ATC) Permit from APCD prior to Receipt of a Building Permit.** Prior to receipt of a building permit, the applicant is required to obtain an ATC permit from PCAPCD.
>
> **Obtain a Permit to Operate from APCD prior to Operation of the Fueling Station.** Prior to operations, the applicant is required to obtain a Permit to Operate from PCAPCD for the operations of the fueling facility. As part of the Permit to Operate, the applicant will be required to comply with the following, as well as any other conditions as detailed per PCAPCD permit requirements:
>
> - Demonstrate compliance with PCAPCD Rules 213 and 214, as well as applicable California Health and Safety Code Sections 41950-41964, the California Code of Regulations Sections 94010-94168 and the ARB Vapor Recovery Executive Orders, to meet vapor recovery and control requirements for the fueling station.
> - Provide annual performance testing and inspection of fuel dispensing facility vapor recovery and control equipment by a certified contractor. PCAPCD must be notified 15 days prior to the testing and test results provided to PCAPCD within 30 days of the testing date.
> - Document weekly, quarterly (if the facility includes a Clean Air Separator), and yearly inspections of the vapor recovery equipment, as well as in-station diagnostics failure alarms, maintenance, and repairs. Inspection documentation may be recorded using forms provided by PCAPCD.

As detailed in Tables 3.3-9 through 3.3-12, the proposed project would not result in excess cancer risk greater than 10 per one million nor a HI greater than 1. Because TAC emissions would not result in excess cancer or non-cancer health risks that would exceed PCAPCD thresholds of significance, this impact would be **less than significant**.

Impact 3.3-5: Exposure of Sensitive Receptors to Objectionable Odors. *Short-term odorous emissions from diesel exhaust from on-site construction equipment would be temporary and intermittent and would dissipate rapidly from the source. The proposed project would include the long-term operation of food preparation and services and a fueling station; while neither is a typical land use considered likely to emit objectionable odors, sensitivity to odors varies considerably among the population and these operations could generate odorous emissions that would affect certain people. However, the project is required to comply with existing regulations that would reduce the potential for exposure to odors. This impact would be* ***less than significant****.*

Odor Emissions Related to Short-Term Construction

The predominant source of power for construction equipment is diesel engines. Some individuals may be offended by exhaust odors from diesel engines and emissions associated with asphalt paving and the application of architectural coatings; however, odors would be temporary and would disperse rapidly with distance from the source. Therefore, construction-generated odors would not result in the frequent exposure of receptors to objectionable odor emissions and this impact would be **less than significant**.

Odor Emissions Related to Long-Term Operations

Types of land uses that are likely to emit objectionable odors include wastewater treatment plants, landfills, composting facilities, petroleum refineries, and manufacturing plants. The proposed project would not include any of these types of facilities. The project site is proposed to include both a warehouse retail store and a fueling station, neither of which is typically considered to be a source of objectionable odors. However, the ability to detect odors varies considerably among the population and is inherently subjective in nature. For instance, vapors from the fueling station component of the proposed project could be considered unpleasant to some. Similarly, the proposed project would include food service preparation, meat preparation, and baking of baked goods, which are potential sources of odors that may affect certain people.

Cooking odors generated by the combustion of animal and vegetable matter result in a complex mixture of odorous gases. A small percentage of these odors may be absorbed by the grease particles, but the vast majority exists separately in the airstream. Additionally, grease trap interceptors would be installed where a significant quantity of fats, oils, and grease (FOG) enters the wastewater stream from food production. Grease traps are passive devices designed to collect the FOG for removal by pumping the tank. The grease layer builds and forms a “grease cap.” Due to a high content of FOG with limited other nutrients and bacteria, the grease cap quickly putrefies and becomes rancid. A very high level of fatty acids is produced, contributing to a lowering of the pH in the trap. A low pH environment allows odor-producing bacteria to flourish.

The food preparation and service areas would be required to comply with applicable state regulations associated with cooking equipment and controls, such as grease filtration and removal systems, exhaust hood systems, and blowers to move air into the hood systems, through air cleaning equipment, and then outdoors. Proposed food preparation and sale areas would be equipped with kitchen exhaust systems and pollution/odor control systems, which typically include smoke control, odor control, and exhaust fan sections. Such equipment would ensure that pollutants associated with smoke and exhaust from cooking surfaces would be captured and filtered, allowing only filtered air to be released into the atmosphere. Grease trap maintenance is very important for odor control. Common grease trap maintenance includes routine cleaning using high pressure washing, pumping the trap out, and using non-toxic, natural odor control products and vapor barriers. Because these systems are standard in food production and the proposed food production and service areas would be equipped with these measures, the food production and service area would not be likely to emit objectionable odors.

As described within the discussion of Impact 3.3-4, vapor recovery systems ensure that minimal vapor is released into the atmosphere. Not only does this limit potential TAC emissions, it also minimizes potential associated odorous gases from being released. Without implementation and proper maintenance of vapor recovery systems, the fueling station could expose sensitive receptors to objectionable odors.

Existing Regulations

Although construction-generated odors would not result in the frequent exposure of receptors to objectionable odor emissions, the project applicant is required to comply with PCAPCD Rule 205 (Nuisance) and Rule 218 (Architectural Coatings) (described in Section 3.3.2, “Regulatory Setting,” above).

> **PCAPCD Rules and Regulations.** The construction contractor is required to comply with the following PCAPCD Rules to ensure reduced odor emissions during construction of the proposed project:
>
> - Rule 205: Nuisance. The construction contractor cannot emit any quantities of air contaminants or other materials that would cause injury, detriment, nuisance, or annoyance to any considerable number of persons or the public; or that would endanger the comfort, repose, health, or safety of any persons or the public; or that would cause or have natural tendency to cause injury or damage to business or property.
> - Rule 218: Architectural Coatings. The construction contractor is required to use coatings that comply with the content limits for VOCs specified in the rule.

The project is also required to comply with permit conditions associated with a Permit to Operate for the proposed fueling stations, which would ensure odorous emissions are minimized. The fueling station is also required to comply with ARB Vapor Recovery Executive Orders that require proper installation and maintenance of vapory recovery systems at the fueling station. Such requirements ensure that minimal vapor and associated odors are released into the atmosphere.

Any odors generated by short-term construction operations would be temporary and disperse rapidly with distance from the source. The project is required to comply with PCAPCD Rule 205 and 218 to further reduce potential odorous emissions during construction. Long-term operations would not include any facilities typically considered to be potential sources of odorous emissions. However, operations such as the food preparation and services or the fueling station could generate odorous gases. The food preparation and services areas would include standard equipment to abate potential odors. Compliance with existing regulations related to the fueling station will reduce odors. With the application of existing regulations, the proposed project would not result in the exposure of sensitive receptors to objectionable odors. The impact is **less than significant**.

3.3.4 Significance after Mitigation

PM_{10} emissions are below the PCAPCD emissions thresholds, However, compliance with existing regulations to reduce idling of construction equipment would further reduce emissions associated with short-term daily heavy-duty equipment. Implementation of the PCAPCD dust control requirements and enhanced exhaust control practices, as required by Rule 228 and Rule 202, would also reduce emissions of criteria air pollutants from short-term construction activities, including reducing NO_X emissions further. PM_{10} emissions are below the PCAPCD emissions thresholds, and application of existing regulations would reduce PM emissions further. Impact 3.3-1 would be **less than significant**.

Project compliance with PCAPCD permit requirements, as well as PCAPCD Rules 213 and 214, applicable California Health and Safety Code Sections 41950-41964, the California Code of Regulations Sections 94010-94168 and the ARB Vapor Recovery Executive Orders would ensure adequate screening for potential exposure of sensitive receptors to substantial TAC emissions from the proposed project. In addition, installation and proper maintenance of a vapor recovery system would reduce emissions of benzene (the primary TAC of concern for human health from fuel dispensing facilities) and other TACs. Impact 3.3-4 is **less than significant**.

Compliance with PCAPCD Rule 205 and 218 will reduce potential odorous emissions during construction. ARB Vapor Recovery Executive Orders to properly install and maintain vapory recovery systems at the proposed fueling station will also reduce exposure to odors. Such requirements ensure that minimal vapor and associated odors are released into the atmosphere. Implementation of existing regulations would ensure that Impact 3.3-5 is **less than significant**.

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