4.3 AIR QUALITY

This section includes a summary of applicable regulations, existing air quality conditions, and an analysis of potential short-term and long-term air quality impacts of the proposed project. The method of analysis for short-term construction, long-term regional (operational), local mobile sources, and toxic air emissions is consistent with the recommendations of the Placer County Air Pollution Control District (PCAPCD). In addition, mitigation measures are recommended, as necessary, to reduce significant air quality impacts.

4.3.1 EXISTING SETTING

The proposed project site is located in the western portion of Placer County, California (western Placer County), which is under the local jurisdiction of the PCAPCD. Western Placer County is within the Sacramento Valley Air Basin (SVAB), which also comprises all of Butte, Colusa, Glenn, Sacramento, Shasta, Sutter, Tehama, Yolo and Yuba counties, and the eastern portion of Solano County.

The ambient concentrations of air pollutant emissions are determined by the amount of emissions released by pollutant sources and the atmosphere's ability to transport and dilute such emissions. Natural factors that affect transport and dilution include terrain, wind, atmospheric stability, and the presence of sunlight. Therefore, existing air quality conditions in the area are determined by such natural factors as topography, meteorology, and climate, in addition to the amount of emissions released by existing air pollutant sources, as discussed separately below.

TOPOGRAPHY, CLIMATE, AND METEOROLOGY

The SVAB is relatively flat, bordered by the North Coast Ranges to the west and the Northern Sierra Nevada Mountains 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 River Delta from the San Francisco Bay area.

The Mediterranean climate type of the SVAB is characterized by hot, dry summers and cool, rainy winters. During the summer, daily temperatures range from 50°F to more than 100°F. The inland location and surrounding mountains shelter the area from much of the ocean breezes that keep the coastal regions moderate in temperature.

Most precipitation in the area results from air masses that move in from the Pacific Ocean, usually from the west or northwest during the winter months. More than half the total annual precipitation falls during the winter rainy season (November through February); the average winter temperature is a moderate 49°F. Characteristic of SVAB winters are also 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 mountains surrounding the SVAB create a barrier to airflow, which leads to the entrapment of air pollutants when meteorological conditions are unfavorable for transport and dilution. The highest frequency of poor air movement occurs in the fall and winter when high-pressure cells are present over the SVAB. The lack of surface wind during these periods combined with the reduced vertical flow because of less surface heating reduces the influx of air and leads to the concentration of air pollutants under stable metrological conditions. 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.

May through October is ozone season in the SVAB. This period is characterized by poor air movement in the mornings with the arrival of the delta sea breeze from the southwest in the afternoons. In addition, longer daylight hours provide a plentiful amount of sunlight to fuel photochemical reactions between reactive organic gases (ROG) and nitrogen oxides (NO_X), which result in ozone formation. Typically, the delta breeze transports air

pollutants northward out of the SVAB; however, a phenomenon known as the Schultz Eddy prevents this from occurring during approximately half of the time from July to September. The Schultz Eddy phenomenon causes the wind pattern to shift southward resulting in air pollutants being blown back into the SVAB. This phenomenon exacerbates the concentration of air pollutant emissions in the area and contributes to violations of the ambient air quality standards.

Local meteorology of the proposed project site is represented by measurements recorded at the Rocklin station. The normal annual precipitation is approximately 21 inches. January temperatures range from a normal minimum of 34°F to a normal maximum of 54°F. July temperatures range from a normal minimum of 59°F to a normal maximum of 96°F (National Oceanic and Atmospheric Administration 1992). The predominant wind direction and speed is from the south-southwest at 10 mph (California Air Resources Board [ARB] 1994).

EXISTING AIR QUALITY - CRITERIA AIR POLLUTANTS

Concentrations of the following air pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable and fine particulate matter (PM_{10} and $PM_{2.5}$), and lead are used as indicators of ambient air quality conditions. Because these are the most prevalent air pollutants known to be deleterious to human health and extensive health-effects criteria documents are available, they are commonly referred to as "criteria air pollutants."

A brief description of each criteria air pollutant including source types, health effects, and future trends is provided below along with the current attainment area designations and monitoring data for the project area.

Ozone

Ozone is a photochemical oxidant, a substance whose oxygen combines chemically with another substance in the presence of sunlight, and the primary component of smog. Ozone is not directly emitted into the air, but is formed through complex chemical reactions between precursor emissions of ROG and NO_X in the presence of sunlight. ROG are volatile organic compounds that are photochemically reactive. ROG emissions result primarily from incomplete combustion and the evaporation of chemical solvents and fuels. NO_X is a group of gaseous compounds of nitrogen and oxygen that results from the combustion of fuels.

Ozone located in the upper atmosphere (stratosphere) acts in a beneficial manner by shielding the earth from harmful ultraviolet radiation that is emitted by the sun. However, ozone located in the lower atmosphere (ground level) is a major health and environmental concern. 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 (Godish 1991).

The adverse health effects associated with exposure to ozone pertain primarily to the respiratory system. Scientific evidence indicates that ambient levels of ozone affect not only sensitive receptors, such as asthmatics and children, but healthy adults as well. Exposure to ambient levels of ozone ranging from 0.10 to 0.40 parts per million (ppm) for 1 to 2 hours has been found to significantly alter lung functions by increasing respiratory rates and pulmonary resistance, decreasing tidal volumes, and impairing respiratory mechanics. Ambient levels of ozone above 0.12 ppm are linked to symptomatic responses that include such symptoms as throat dryness, chest tightness, headache, and nausea. In addition to the above adverse health effects, evidence also exists relating ozone exposure to an increase in the permeability of respiratory epithelia; such increased permeability leads to an increase in responsiveness of the respiratory system to challenges, and the interference or inhibition of the immune system's ability to defend against infection (Godish 1991).

Emissions of ozone precursors ROG and NO_X have decreased over the past several years because of more stringent motor vehicle standards and cleaner burning fuels. Consequently, peak 1-hour and 8-hour ozone concentrations in the SVAB have declined overall by about 15% since 1988. However, peak ozone values in the SVAB have not declined as rapidly over the last several years as they have in other urban areas. This can be attributed to influx of pollutants into the SVAB from other urbanized areas, making the region both a transport contributor and a receptor of pollutants (ARB 2006a).

Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless, and poisonous gas produced by incomplete burning of carbon in fuels, primarily from mobile (transportation) sources. In fact, 77% of the nationwide CO emissions are from mobile sources. The other 23% consists of CO emissions from wood-burning stoves, incinerators, and industrial sources.

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, resulting in a drastic reduction in the amount of oxygen available to the cells. Adverse health effects associated with exposure to CO concentrations include such symptoms as dizziness, headaches, and fatigue. CO exposure is especially harmful to individuals who suffer from cardiovascular and respiratory diseases (U.S. Environmental Protection Agency [EPA] 2007a).

The highest concentrations are generally associated with cold stagnant weather conditions that occur during the winter. In contrast to ozone, which tends to be a regional pollutant, CO problems tend to be localized.

Nitrogen Dioxide

Nitrogen dioxide (NO_2) is a brownish, highly reactive gas that is present in all urban environments. The major human-made sources of NO_2 are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines. Combustion devices emit primarily nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO_2 (EPA 2007a). The combined emissions of NO and NO_2 are referred to as NO_X, which are reported as equivalent NO_2. Because NO_2 is formed and depleted by reactions associated with photochemical smog (ozone), the NO_2 concentration in a particular geographical area may not be representative of the local NO_X emission sources.

Inhalation is the most common route of exposure to NO_2. Because NO_2 has relatively low solubility in water, the principal site of toxicity is in the lower respiratory tract. The severity of the adverse health effects depends primarily on the concentration inhaled rather than the duration of exposure. An individual may experience a variety of acute symptoms, including coughing, difficulty with breathing, vomiting, headache, and eye irritation during or shortly after exposure. After a period of approximately 4 to 12 hours, an exposed individual may experience chemical pneumonitis or pulmonary edema with breathing abnormalities, cough, cyanosis, chest pain, and rapid heartbeat. Severe, symptomatic NO_2 intoxication after acute exposure has been linked on occasion with prolonged respiratory impairment with such symptoms as chronic bronchitis and decreased lung functions.

Sulfur Dioxide

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

Particulate Matter

Respirable particulate matter with an aerodynamic diameter of 10 micrometers or less is referred to as PM_{10}. PM_{10} consists of particulate matter emitted directly into the air, such as fugitive dust, soot, and smoke from mobile and stationary sources, construction operations, fires and natural windblown dust, and particulate matter formed in the atmosphere by condensation and/or transformation of SO_2 and ROG (EPA 2007a). Fine particulate matter ($PM_{2.5}$) includes a subgroup of smaller particles that have an aerodynamic diameter of 2.5 micrometers or less (ARB 2006a).

The adverse health effects associated with PM_{10} depend on the specific composition of the particulate matter. For example, health effects may be associated with metals, polycyclic aromatic hydrocarbons (PAH), and other toxic substances adsorbed onto fine particulate matter, which is referred to as the piggybacking effect, or with fine dust particles of silica or asbestos. Generally, adverse health effects associated with PM_{10} may result from both short-term and long-term exposure to elevated concentrations and may include breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, alterations to the immune system, carcinogenesis, and premature death (EPA 2007a). $PM_{2.5}$ poses an increased health risk because the particles can deposit deep in the lungs and may contain substances that are particularly harmful to human health.

Direct emissions of both PM_{10} and $PM_{2.5}$ have increased in the SVAB between 1975 and 2000 and are projected to increase through at least 2020. These emissions are dominated by area-wide sources, primarily because of development (ARB 2006a).

Lead

Lead is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of the phase-out of leaded gasoline, as discussed in detail below, metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers.

Twenty years ago, mobile sources were the main contributor to ambient lead concentrations in the air. In the early 1970s, the EPA set national regulations to gradually reduce the lead content in gasoline. In 1975, unleaded gasoline was introduced for motor vehicles equipped with catalytic converters. The EPA banned the use of leaded gasoline in highway vehicles in December 1995 (EPA 2007a).

As a result of the EPA's regulatory efforts to remove lead from gasoline, emissions of lead from the transportation sector have declined dramatically (95% between 1980 and 1999), and levels of lead in the air decreased by 94% between 1980 and 1999. Transportation sources, primarily airplanes, now contribute only 13% of lead emissions. A recent National Health and Nutrition Examination Survey reported a 78% decrease in the levels of lead in people's blood between 1976 and 1991. This dramatic decline can be attributed to the move from leaded to unleaded gasoline (EPA 2007a).

AMBIENT AIR QUALITY - MONITORING STATION DATA AND ATTAINMENT DESIGNATIONS

Criteria air pollutant concentrations are measured at several monitoring stations in the SVAB. The Auburn-C Avenue and the Roseville-North Sunrise Boulevard stations are the closest in proximity to the proposed project site with recent data for ozone, CO, NO_2, $PM_{2.5}$ and PM_{10}. In general, the ambient air quality measurements from these stations are representative of the air quality in the vicinity of the proposed project site. Table 4.3-1 summarizes the air quality data from the most recent 3 years.

Both California Air Resources Board (ARB) and the U.S. Environmental Protection Agency (EPA) use this type of monitoring data to designate areas according to attainment status for criteria air pollutants established by the agencies. The purpose of these designations is to identify those areas with air quality problems and thereby

initiate planning efforts for improvement. The three basic designation categories are nonattainment, attainment, and unclassified. Unclassified is used in an area that cannot be classified on the basis of available information as meeting or not meeting the standards. In addition, the California designations include a subcategory of the nonattainment designation, called nonattainment-transitional. The nonattainment-transitional designation is given to nonattainment areas that are progressing and nearing attainment. The most current attainment designations for the Placer County portion of the SVAB are shown in Table 4.3-2 for each criteria air pollutant.

Table 4.3-1
Summary of Annual Ambient Air Quality Data (2004–2006)[1]

	2004	2005	2006
Auburn-C Avenue Monitoring Station Ozone			
- Ozone			
Maximum concentration (1-hr/8-hr, ppm)	0.118/0.101	0.120/0.107	0.120/0.107
Number of days state standard exceeded (1-hr)	14	11	11
Number of days national standard exceeded (1-hr/8-hr)	0/12	0/10	0/10
Roseville-North Sunrise Boulevard Monitoring Station			
- Ozone			
Maximum concentration (1-hr/8-hr, ppm)	0.106/0.085	0.118/0.106	0.121/0.097
Number of days state standard exceeded (1-hr)	5	13	16
Number of days national standard exceeded (1-hr/8-hr)	0/1	0/9	0/9
- Carbon Monoxide (CO)			
Maximum concentration (1-hr/8-hr, ppm)	2.6/1.93	2.0/1.27	-
Number of days state standard exceeded (8-hr)	0	0	-
Number of days national standard exceeded (1-hr/8-hr)	0/0	0/0	-
- Nitrogen Dioxide (NO_2)			
Maximum concentration (1-hr, ppm)	0.067	0.079	0.063
Number of days state standard exceeded (1-hr)	0	0	0
Annual Average (ppm)	0.015	0.015	0.013
- Fine Particulate Matter ($PM_{2.5}$)			
Maximum concentration ($\mu g/m^3$)	47.8	59.2	45.0
Number of days national standard exceeded (measured[2])	0	0	0
- Respirable Particulate Matter (PM_{10})			
Maximum concentration ($\mu g/m^3$)	43.0	40.0	55.0
Number of days state standard exceeded (measured/calculated[2])	0/0	0/-	1
Number of days national standard exceeded (measured/ calculated[2])	0/0	0/-	0

[1] Where, $\mu g/m^3$ = micrograms per cubic meter and ppm = parts per million.
[2] Measured days are those days that 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. Calculated days are the estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year.
Sources: ARB 2007b, EPA 2007b, 2007c

Table 4.3-2
Ambient Air Quality Standards and Designations

Pollutant	Averaging Time	California		National Standards [1]		
		Standards [2,3]	Attainment Status [4]	Primary [3,5]	Secondary [3,6]	Attainment Status [7]
Ozone	1-hour	0.09 ppm (180 µg/m^3)	N(Serious) [10]	–[8]	Same as Primary Standard	–[8]
	8-hour	0.07 ppm (137 µg/m^3)	–	0.08 ppm (157 µg/m^3)		N(Serious)
Carbon Monoxide (CO)	1-hour	20 ppm (23 mg/m^3)	A	35 ppm (40 mg/m^3)	–	U/A
	8-hour	9 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)		
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm (56 µg/m^3)	–	0.053 ppm (100 µg/m^3)	Same as Primary Standard	U/A
	1-hour	0.18 ppm (338 µg/m^3)	A	–		–
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	–	–	0.030 ppm (80 µg/m^3)	–	U
	24-hour	0.04 ppm (105 µg/m^3)	A	0.14 ppm (365 µg/m^3)	–	
	3-hour	–	–	–	0.5 ppm (1300 µg/m^3)	
	1-hour	0.25 ppm (655 µg/m^3)	A	–	–	–
Respirable Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 µg/m^3	N	–[8]	Same as Primary Standard	U
	24-hour	50 µg/m^3		150 µg/m^3		
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	12 µg/m^3	N	15 µg/m^3	Same as Primary Standard	U/A
	24-hour	–	–	35 µg/m^3		
Lead[10]	30-day Average	1.5 µg/m^3	A	–	–	–
	Calendar Quarter	–	–	1.5 µg/m^3	Same as Primary Standard	

Table 4.3-2
Ambient Air Quality Standards and Designations

Pollutant	Averaging Time	California		National Standards [1]		
		Standards [2,3]	Attainment Status [4]	Primary [3,5]	Secondary [3,6]	Attainment Status [7]
Sulfates	24-hour	25 µg/m^3	A	**No National Standards**		
Hydrogen Sulfide	1-hour	0.03 ppm (42 µg/m^3)	U			
Vinyl Chloride[9]	24-hour	0.01 ppm (26 µg/m^3)	U/A			
Visibility-Reducing Particle Matter	8-hour	Extinction coefficient of 0.23 per kilometer —visibility of 10 miles or more (0.07—30 miles or more for Lake Tahoe) because of particles when the relative humidity is less than 70%.	U			

1 National standards (other than ozone, PM, and those based on annual averages or annual arithmetic means) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. The PM_{10} 24-hour standard is attained when 99% of the daily concentrations, averaged over 3 years, are equal to or less than the standard. The $PM_{2.5}$ 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact the EPA for further clarification and current federal policies.

2 California standards for ozone, CO (except Lake Tahoe), SO_2 (1- and 24-hour), NO_2, PM, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

3 Concentration expressed first in units in which it was promulgated [i.e., parts per million (ppm) or micrograms per cubic meter (µg/m^3)]. Equivalent units given in parentheses are based upon a reference temperature of 25°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 a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4 Unclassified (U): a pollutant is designated unclassified if the data are incomplete and do not support a designation of attainment or nonattainment.
Attainment (A): a pollutant is designated attainment if the state standard for that pollutant was not violated at any site in the area during a 3-year period.
Nonattainment (N): a pollutant is designated nonattainment if there was a least one violation of a state standard for that pollutant in the area.
Nonattainment/Transitional (NT): is a subcategory of the nonattainment designation. An area is designated nonattainment/transitional to signify that the area is close to attaining the standard for that pollutant.

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

6 National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7 Nonattainment (N): any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant.
Attainment (A): any area that meets the national primary or secondary ambient air quality standard for the pollutant.
Unclassifiable (U): any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant.

8 The 1-hour ozone NAAQS was revoked on June 15, 2005. The annual PM_{10} NAAQS was revoked in October 2006.

9 ARB has identified lead and vinyl chloride as toxic air contaminants with no threshold 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.

10. N(serious) = Non-attainment area (serious), defined as an area in non-attainment with an ozone design value of 0.160 up to 0.180 ppm.

Source: ARB 2007a, EPA 2007b

EXISTING AIR QUALITY - TOXIC AIR CONTAMINANTS

Concentrations of toxic air contaminants (TACs) are also used as indicators of ambient air quality conditions. A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations.

According to the California Almanac of Emissions and Air Quality (ARB 2006a), the majority of the estimated health risk from TACs can be attributed to relatively few compounds, the most important being PM from diesel-fueled engines (diesel PM). Diesel PM differs from other TACs in that it is not a single substance, but rather a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present. Unlike the other TACs, no ambient monitoring data are available for diesel PM because no routine measurement method currently exists. However, the ARB has made preliminary concentration estimates based on a PM exposure method. This method uses ARB emissions inventory's PM_{10} database, ambient PM_{10} monitoring data, and the results from several studies to estimate concentrations of diesel PM. In addition to diesel PM, benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, *para*-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene pose the greatest existing ambient risk, for which data are available, in California.

Diesel PM poses the greatest health risk among these ten TACs mentioned. Based on receptor modeling techniques, the ARB estimated its health risk to be 360 excess cancer cases per million people in the SVAB. Since 1990, the diesel PM's health risk has been reduced by 52%. Overall, levels of most TACs have gone down since 1990 except for *para*-dichlorobenzene and formaldehyde (ARB 2006a).

Asbestos

Asbestos is the common name for a group of naturally occurring fibrous silicate minerals that can separate into thin but strong and durable fibers. Naturally occurring asbestos (NOA), which was identified as a TAC in 1986 by the ARB, is located in many parts of California, including several foothill areas of Placer County, and are commonly associated with serpentine.

For individuals living in areas of NOA, there are many potential pathways for airborne exposure. Exposures to soil dust containing asbestos can occur under a variety of scenarios, including children playing in the dirt, dust raised from unpaved roads and driveways covered with crushed serpentine, uncontrolled quarry emissions, grading and construction associated with development of new housing, gardening and other human activities. For homes built on asbestos outcroppings, asbestos can be tracked into the home and can also enter as fibers suspended in outdoor air. Once such fibers are indoors, they can be entrained into the air by normal household activities, such as vacuuming (as many fibers will simply pass through vacuum cleaner bags).

The general public exposed to low levels of asbestos may be at elevated risk (e.g., above background rates) of lung cancer and mesothelioma. The risk is proportional to the cumulative inhaled dose (number of fibers), and also increases with the time since first exposure. Although there are a number of factors that influence the disease-causing potency of any given asbestos, such as fiber length and width, fiber type, and fiber chemistry, all forms are carcinogens.

Geologic maps prepared by the California Geologic Survey (formerly the California Division of Mines and Geology) show areas of higher probability for asbestos containing rock within the broad zone of faults that follows the low foothills and lay in a south-east to north-west band. The Placer County communities of Auburn, Colfax, Meadow Vista, and Foresthill are among those that are within this fault band. Generally, there are no areas of high probability of occurrence for NOA in Placer County that lay neither to the west of Folsom Lake nor to the south of Wise Road. That is, Roseville (and Granite Bay), Rocklin, Lincoln, Loomis, Penryn, and

Newcastle lay within geologic areas that have a lower probability for the presence of NOA. There are some isolated areas of higher probability for the presence of NOA within the Tahoe National Forest.

The identification of locations in Placer County has been improved with the development of an enhanced 1:1,100,000 scale map by the California Geological Survey. The map denotes areas of Placer County that are more or less likely to contain NOA that is based on available soil and geologic studies, with some field verification.

The characterization of an area as having a lower overall probability of NOA presence means that although the likelihood is slight, in some instances NOA might be found within such an area. Similarly, a location in the area identified as being most likely to have NOA may not contain NOA.

NOA deposits have been found in rock other than ultramafic and serpentine rock; for example NOA deposits have been found in metavolcanic rocks such as the Copper Hill Volcanics in the Folsom vicinity. Metavolcanic rock formations are prevalent to the northeast, north, and west of Auburn. Finally in areas of sedimentary of alluvial rock deposits, such as exist in western Placer County; it is possible that analytically detectible NOA may be found.

According to Special Report 190: Relative Likelihood for the Presence of Naturally Occurring Asbestos in Placer County, California (Higgins and Clinkenbeard 2006) and the General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos (Churchill and Hill 2000), the proposed project site is not located in an area that is likely to contain NOA.

4.3.2 REGULATORY SETTING

Air quality within Placer County is regulated by such agencies as the EPA, ARB, and PCAPCD. Each of these agencies develops rules, regulations, policies, and/or goals to comply with applicable legislation. Although EPA regulations may not be superseded, both state and local regulations may be more stringent.

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

At the federal level, the EPA has been charged with implementing national air quality programs. The EPA's air quality mandates are drawn primarily from the federal Clean Air Act (CAA), which was enacted in 1970. The most recent major amendments made by Congress were in 1990.

The CAA required the EPA to establish national ambient air quality standards (NAAQS). As shown in Table 4.3-2, the EPA has established primary and secondary NAAQS for the following criteria air pollutants:

- ozone,
- CO,
- NO_2,
- SO_2,
- PM_{10},
- $PM_{2.5}$, and
- lead.

The primary standards protect the public health and the secondary standards protect public welfare. The CAA also required 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 periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. The EPA has responsibility to review all state SIPs to

determine conformation to the mandates of the CAA, and the amendments thereof, and determine if implementation will achieve air quality goals. If the EPA determines a SIP to be inadequate, a Federal Implementation Plan (FIP) may be prepared for the nonattainment area that imposes additional control measures. Failure to submit an approvable SIP or to implement the plan within the mandated timeframe may result in sanctions being applied to transportation funding and stationary air pollution sources in the air basin.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

The ARB is the agency 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, which was adopted in 1988, required the ARB to establish California ambient air quality standards (CAAQS) (Table 4.3-2). The ARB has established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing particulate matter, and the above mentioned criteria air pollutants. In most cases the CAAQS are more stringent than the 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 local air districts in the state endeavor to achieve and maintain the CAAQS by the earliest practical date. The act specifies that local air districts should focus particular attention on reducing the emissions from transportation and area-wide emission sources, and provides districts with the authority to regulate indirect sources.

Other ARB responsibilities include, but are not limited to, overseeing local air district compliance with California and federal laws, approving local air quality plans, submitting SIPs to the EPA, monitoring air quality, determining and updating area designations and maps, and setting emissions standards for new mobile sources, consumer products, small utility engines, off-road vehicles, and fuels.

LOCAL PLANS, POLICIES, REGULATIONS, AND LAWS

Placer County Air Pollution Control District

The 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. The clean air strategy of the PCAPCD includes the preparation of plans for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations concerning sources of air pollution, and issuance of permits for stationary sources of air pollution. The PCAPCD also inspects stationary sources of air pollution and responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements programs and regulations required by the CAA, CAAA, and the CCAA. Air quality plans applicable to the proposed project are discussed below.

As mentioned above, the PCAPCD adopts rules and regulations. All projects are subject to PCAPCD rules and regulations in effect at the time of construction. Specific rules applicable to the construction of the proposed project may include, but are not limited to:

- ***Rule 202-Visible Emissions.*** A person shall not discharge into the atmosphere from any single source of emission whatsoever any air contaminant for a period or periods aggregating more than three minutes in any one hour which is as dark or darker in shade as that designated as number 1 on the Ringelmann Chart, as published by the United States Bureau of Mines.

- ***Rule 205-Nuisances.*** A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such

persons or the public, or which cause to have a natural tendency to cause injury or damage to business or property.

- ***Rule 217-Cutback and Emulsified Asphalt Paving Materials.*** A person shall not manufacture for sale nor use for paving, road construction or road maintenance any: rapid cure cutback asphalt; slow cure cutback asphalt containing organic compounds which evaporate at 500°F or lower as determined by current American Society for Testing and Materials (ASTM) Method D402; medium cure cutback asphalt except as provided in Section 1.2.; or emulsified asphalt containing organic compounds which evaporate at 500°F or lower as determined by current ASTM Method D244, in excess of 3% by volume.

- ***Rule 218-Application of Architectural Coatings.*** No person shall manufacture, blend, or repackage for sale within PCAPCD; supply, sell, or offer for sale within PCAPCD; or solicit for application or apply within the PCAPCD, any architectural coating with a volatile organic carbon (VOC) content in excess of the corresponding specified manufacturer's maximum recommendation.

- ***Rule 228-Fugitive Dust.***

  - ***Visible Emissions Not Allowed Beyond the Boundary Line:*** A person shall not cause or allow the emissions of fugitive dust from any active operation, open storage pile, or disturbed surface area (including disturbance as a result of the raising and/or keeping of animals or by vehicle use), such that the presence of such dust remains visible in the atmosphere beyond the boundary line of the emission source.

  - ***Visible Emissions from Active Operations:*** In addition to the requirements of Rule 202, Visible Emissions, a person shall not cause or allow fugitive dust generated by active operations, an open storage pile, or a disturbed surface area, such that the fugitive dust is of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke as dark or darker in shade as that designated as number 2 on the Ringelmann Chart, as published by the United States Bureau of Mines.

  - ***Concentration Limit:*** A person shall not cause or allow PM_{10} levels to exceed 50 micrograms per cubic meter ($\mu g/m^3$) (24-hour average) when determined, by simultaneous sampling, as the difference between upwind and downwind samples collected on high-volume particulate matter samplers or other EPA-approved equivalent method for PM_{10} monitoring.

  - ***Track-Out onto Paved Public Roadways:*** Visible roadway dust as a result of active operations, spillage from transport trucks, and the track-out of bulk material onto public paved roadways shall be minimized and removed.

    - The track-out of bulk material onto public paved roadways as a result of operations, or erosion, shall be minimized by the use of track-out and erosion control, minimization, and preventative measures, and removed within one hour from adjacent streets such material anytime track-out extends for a cumulative distance of greater than 50 feet onto any paved public road during active operations.

    - All visible roadway dust tracked-out upon public paved roadways as a result of active operations shall be removed at the conclusion of each work day when active operations cease, or every 24 hours for continuous operations. Wet sweeping or a High Efficiency Particulate Air (HEPA) filter equipped vacuum device shall be used for roadway dust removal.

    - Any material tracked-out, or carried by erosion, and clean-up water, shall be prevented from entering waterways or storm water inlets as required to comply water quality control requirements.

- ***Minimum Dust Control Requirements:*** The following dust mitigation measures are to be initiated at the start and maintained throughout the duration of the construction or grading activity, including any construction or grading for road construction or maintenance.

  – Unpaved areas subject to vehicle traffic must be stabilized by being kept wet, treated with a chemical dust suppressant, or covered.

  – The speed of any vehicles and equipment traveling across unpaved areas must be no more than 15 miles per hour 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.

  – Storage piles and disturbed areas not subject to vehicular traffic must be stabilized by being kept wet, treated with a chemical dust suppressant, or covered when material is not being added to or removed from the pile.

  – Prior to any ground disturbance, including grading, excavating, and land clearing, sufficient water must be applied to the area to be disturbed to prevent emitting dust exceeding Ringelmann 2 and to minimize visible emissions from crossing the boundary line.

  – Construction vehicles leaving the site shall be cleaned to prevent dust, silt, mud, and dirt, from being released or tracked offsite.

  – When wind speeds are high enough to result in dust emissions crossing the boundary line, despite the application of dust mitigation measures, grading and earthmoving operations shall be suspended.

  – No trucks are allowed to transport excavated material off-site unless the trucks are maintained such that no spillage can occur from holes or other openings in cargo compartments, and 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 six inches from the top and that no point of the load extends above the top of the cargo compartment.

- ***Wind-Driven Fugitive Dust Control:*** A person shall take action(s), such as surface stabilization, establishment of a vegetative cover, or paving, to minimize wind-driven dust from inactive disturbed surface areas.

- ***Rule 501-General Permit Requirements.*** Any person operating an article, machine, equipment or other contrivance, the use of which may cause, eliminate, reduce, or control the issuance of air contaminants, shall first obtain a written permit from the Air Pollution Control Officer (APCO). Stationary sources subject to the requirements of Rule 507, Federal Operating Permit Program, must also obtain a Title V permit pursuant to the requirements and procedures of that rule.

Air Quality Plans

The PCAPCD, in coordination with the air quality management districts and air pollution control districts of El Dorado, Sacramento, Solano, Sutter, and Yolo counties, prepared and submitted the 1991 Air Quality Attainment Plan (AQAP) in compliance with the requirements set forth in the CCAA, which specifically addressed the nonattainment status for ozone and to a lesser extent, CO and PM_{10}. The CCAA also requires a triennial assessment of the extent of air quality improvements and emission reductions achieved through the use of control measures. As part of the assessment, the attainment plan must be reviewed and, if necessary, revised to correct for deficiencies in progress and to incorporate new data or projections. The requirement of the CCAA for a first triennial progress report and revision of the 1991 AQAP was fulfilled with the preparation and adoption of the

1994 Ozone Attainment Plan (OAP). The OAP stresses attainment of ozone standards and focuses on strategies for reducing ozone precursor emissions of reactive organic gases (ROG) and oxides of nitrogen (NO_X). It promotes active public involvement, enforcement of compliance with PCAPCD rules and regulations, public education in both the public and private sectors, development and promotion of transportation and land use programs designed to reduce vehicle miles traveled (VMT) within the region, and implementation of stationary and mobile-source control measures. The OAP became part of the SIP in accordance with the requirements of the CAAA and amended the 1991 AQAP. However, at that time the region could not show that the national ozone (1-hour) standard would be met by 1999. In exchange for moving the deadline to 2005, the region accepted a designation of "severe nonattainment" coupled with additional emission requirements on stationary sources. Additional triennial reports were also prepared in 1997, 2000, and 2003 in compliance with the CCAA that act as incremental updates.

As a nonattainment area, the region is also required to submit rate-of-progress milestone evaluations in accordance with the CAAA. Milestone reports were prepared for 1996, 1999, and 2002. These milestone reports include compliance demonstrations that the requirements have been met for the Sacramento nonattainment area. The air quality attainment plans and reports present comprehensive strategies to reduce ROG, NO_X, and PM_{10} emissions from stationary, area, mobile, and indirect sources. Such strategies include the adoption of rules and regulations; enhancement of CEQA participation; implementation of a new and modified indirect source review program; adoption of local air quality plans; and stationary-, mobile-, and indirect-source control measures.

In July of 1997, the EPA promulgated a new 8-hour ozone standard. This change lowered the standard for ambient ozone from 0.12 ppm (parts per million) averaged over one hour to 0.08 ppm averaged over eight hours. In general, the 8-hour standard is more protective of public health and more stringent than the 1-hour standard. The promulgation of this standard prompted new designations and nonattainment classifications in June 2004, and resulted in the revocation of the 1-hour standard in June 2005. The region has been designated as a nonattainment (serious) area for the national (8-hour) ozone standard with an attainment deadline of June 2013.

Although the region has made significant progress in reducing ozone, a problem has arisen with regard to another issue. The region's transportation plan must conform and show that implementation will not harm the region's chances of attaining the ozone standard. The SIP is tied to a "motor vehicle emissions budget" and thus, transportation planners must ensure that emissions anticipated from plans and improvement programs remain within this budget. The region was not required to update the SIP before the ozone (8-hour) plans were due in 2006. However, since a conformity lapse began October 4, 2004, an expedited process to prepare a plan is underway (SMAQMD 2007).

TOXIC AIR CONTAMINANTS

Air quality regulations also focus on TACs, or in federal parlance hazardous air pollutants (HAPs). In general, for those TACs that may cause cancer, there is no concentration that does not present some risk. In other words, there is no threshold level below which adverse health impacts may not be expected to occur. This contrasts with the criteria air pollutants for which acceptable levels of exposure can be determined and for which the ambient standards have been established (Table 4.3-2). Instead, the 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, in conjunction with additional rules set forth by the PCAPCD, establish the regulatory framework for TACs.

Federal Hazardous Air Pollutant Programs

The EPA has programs for identifying and regulating HAPs. Title III of the CAAA directed the EPA to promulgate national emissions standards for HAPs (NESHAP). The NESHAP may differ for major sources than for area sources of HAPs. Major sources are defined as stationary sources with potential to emit more than 10 tons per year (TPY) of any HAP or more than 25 TPY of any combination of HAPs; all other sources are considered

area sources. The emissions standards are to be promulgated in two phases. In the first phase (1992–2000), the EPA developed technology-based emission standards designed to produce the maximum emission reduction achievable. These standards are generally referred to as requiring MACT. For area sources, the standards may be different, based on generally available control technology. In the second phase (2001–2008), the EPA is required to promulgate health risk–based emissions standards where deemed necessary to address risks remaining after implementation of the technology-based NESHAP standards.

The CAAA also required the EPA to promulgate vehicle or fuel standards containing reasonable requirements that control toxic emissions, at a minimum to benzene and formaldehyde. Performance criteria were established to limit mobile-source emissions of toxics, including benzene, formaldehyde, and 1-3-butadiene. In addition, Section 219 required the use of reformulated gasoline in selected areas with the most severe ozone nonattainment conditions to further reduce mobile-source emissions.

State and Local Toxic Air Contaminant Programs

TACs in California are primarily regulated through the Tanner Air Toxics Act (AB 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). AB 1807 sets forth a formal procedure for ARB to designate substances as TACs. This includes research, public participation, and scientific peer review before ARB can designate a substance as a TAC. To date, ARB has identified over 21 TACs, and adopted the EPA's list of HAPs as TACs. Most recently, diesel PM was added to the ARB list of TACs.

Once a TAC is identified, the ARB then adopts an Airborne Toxics Control Measure (ATCM) for sources that emit that particular TAC. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate BACT to minimize emissions.

The Hot Spots Act requires that existing facilities that emit toxic substances above a specified level prepare a toxic-emission inventory, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures.

The ARB has adopted diesel exhaust control measures and more stringent emission standards for various on-road mobile sources of emissions, including transit buses and off-road diesel equipment (e.g., tractors, generators). In February 2000, the ARB adopted a new public transit bus fleet rule and emission standards for new urban buses. These new rules and standards provide for 1) more stringent emission standards for some new urban bus engines beginning with 2002 model year engines; 2) zero-emission bus demonstration and purchase requirements applicable to transit agencies; and 3) reporting requirements with which transit agencies must demonstrate compliance with the urban transit bus fleet rule. Upcoming milestones include the low sulfur diesel fuel requirement, and tighter emission standards for heavy-duty diesel trucks (2007) and off-road diesel equipment (2011) nationwide. Thus, with the turnover of vehicle fleets, TAC emissions will substantially decrease in the future in comparison to current conditions. Mobile-source emissions of TACs (i.e., benzene, 1-3-butadiene, diesel PM) have been reduced significantly over the last decade, and will be reduced further in California through a progression of regulatory measures (e.g., Low Emission Vehicle (LEV)/Clean Fuels and Phase II reformulated gasoline regulations) and control technologies. With implementation of ARB's Risk Reduction Plan, it is expected that diesel PM concentrations will be reduced by 75% in 2010 and 85% in 2020 from the estimated year 2000 level. Adopted regulations are also expected to continue to reduce formaldehyde emissions from cars and light-duty trucks. As emissions are reduced, it is expected that risks associated with exposure to the emissions will also be reduced.

The ARB recently published the Air Quality and Land Use Handbook: A Community Health Perspective, which provides guidance concerning land use compatibility with TAC sources (ARB 2005). While not a law or adopted policy, the handbook 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 to help keep children and other sensitive populations out of harm's way. A number of comments on the Handbook were provided to the ARB by air districts, other agencies, real estate representatives, and others. The comments included concern over whether the ARB was playing a role in local land use planning, the validity of relying on static air quality conditions over the next several decades in light of technological improvements, and support for providing information that can be used in local decision making.

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 possess the potential to emit TACs are required to obtain permits from the district. 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. The PCAPCD limits emissions and public exposure to TACs through a number of programs. The PCAPCD prioritizes TAC-emitting stationary sources based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors.

Sources that require a permit are analyzed by the PCAPCD (e.g., health risk assessment) based on their potential to emit toxics. If it is determined that the project will emit toxics in excess of PCAPCD's threshold of significant for TACs, as identified below, sources have to implement the best available control technology for TACs (T-BACT) in order to reduce emissions. If a source cannot reduce the risk below the threshold of significance even after T-BACT has been implemented, the PCAPCD will deny the permit required by the source. This helps to prevent new problems and reduces emissions from existing older sources by requiring them to apply new technology when retrofitting with respect to TACs. It is important to note that the air quality permitting process applies to stationary sources; and properties, which may be exposed to elevated levels of non-stationary type sources of TACs, and the non-stationary type sources themselves (e.g., on-road mobile) are not subject to this process or any requirements of T-BACT implementation. Rather, emissions controls on such sources (e.g., vehicles) are subject to regulations implemented on the state and federal level.

City of Rocklin

The following policy is applicable to the proposed project (City of Rocklin 1991):

- Policy 25. To coordinate and cooperate with the Placer County Air Pollution District in the development of stationary and mobile source control measures affecting the City of Rocklin, to be included in the California Clean Air Act Plan for Placer County (Rocklin Circulation Element).

Existing Sources

Stationary

According to the EPA, the only major stationary sources of TAC emissions located near the project site are Sierra Pine, LTD, and Pacific Manufactured Products, Inc, both located approximately 1 mile to the northwest of the project site (EPA 2007d). These industrial facilities are subject to PCAPCD's permit requirements involving Best Available Control Technology for toxics (T-BACT) and offset requirements.

Mobile Sources

Existing sources of TAC's also include mobile sources (i.e., diesel-fueled internal combustion engines) on nearby roadways (e.g., Interstate 80, which borders the north boundary of the project site). According to the ARB, on-road diesel-fueled vehicles contribute approximately 24% of the statewide total of TAC emissions, with an additional 71% attributed to other mobile sources such as construction, mining, and agricultural equipment; and transport refrigeration units.

EXISTING AIR QUALITY - ODORS

Typically odors are regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

With respect to odors, the human nose is the sole sensing device. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; in fact, an odor that is offensive to one person (e.g., from a fast-food restaurant) may be perfectly acceptable to another. It is also important to note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word "strong" to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

4.3.3 IMPACTS AND MITIGATION MEASURES

METHOD OF ANALYSIS

Short-term construction-generated criteria air pollutant (e.g., PM_{10}) and ozone precursor emissions (ROG and NO_X) were assessed in accordance with PCAPCD-recommended methods. Emissions were modeled using the URBEMIS 2007 Version 9.2 computer model, and other emission factors and recommended methodologies from PCAPCD. Modeling was based on project-specific data (e.g., estimated duration of construction, size and type of proposed land uses) and URBEMIS default settings for the SVAB.

Long-term (i.e., operational) regional criteria air pollutant and precursor emissions, including mobile- and area-source emissions, were also quantified using the URBEMIS 2007 Version 9.2 computer model. Modeling was based on project-specific data (e.g., size and type of proposed uses), URBEMIS default settings for the SVAB, and trip generation data from the traffic analysis (LSA 2007). Long-term stationary source emissions were qualitatively assessed in accordance with PCAPCD-recommended methodologies.

Other air quality impacts (i.e., local mobile source and odor) were assessed in accordance with ARB and PCAPCD-recommended methodologies. Such methodologies include the use of a screening level procedure for local mobile-source CO concentrations. The Sacramento Metropolitan Air Quality Management District (SMAQMD)-recommended screening level analysis for local CO was used in the absence of such from PCAPCD (SMAQMD 2004, 2007).

For TAC emissions, a health risk assessment was prepared (Michael Brandman Associates 2007). The health risk assessment employed several mathematical modeling tools that are routinely used to perform such air quality assessments. These tools included:

- The U.S. Environmental Protection Agency (USEPA) Industrial Source Complex Model (ISC) (USEPA 1995), which is the air dispersion modeling method approved by the California Air Resources Board (CARB) for such assessments;
- The CARB EMFAC2007 mobile emission source model (CARB 2006c), which is used to calculate emissions from various mobile sources that would access the project site during operations; and
- The California Office of Environmental Health Hazard Assessment (OEHHA) Tier I risk assessment methodology to estimate potential cancer risks from diesel PM emissions.

The net increase in greenhouse gas emissions generated by the project is addressed in Chapter 6.

THRESHOLDS OF SIGNIFICANCE

Per Appendix G of the CEQA Guidelines and PCAPCD recommendations, air quality impacts are considered significant if implementation of the proposed project under consideration would do any of the following:

- Generate (directly or indirectly through automobile trip generation) criteria air pollutant or precursor emissions in excess of significance thresholds developed by the PCAPCD [i.e., 82 pounds/day (lb/day) of ROG, NO_X, or PM_{10}; or 550 lb/day of CO)];
- Cause or contribute to local CO concentrations exceeding 20 parts per million (ppm) over a one-hour averaging period or 9 ppm over an eight-hour averaging period;
- Conflict with adopted environmental plans, policies, or regulations for air pollutants;
- Conflict with or obstruct implementation of any applicable air quality plans;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Expose sensitive receptors to substantial pollutant concentrations. For TACs, the PCAPCD applies a cancer risk significance threshold of 10 in one million for an individual project's contribution to excess lifetime cancer risk (Michael Brandman Associates 2007). The risk is defined as "excess" because it is above the background cancer risk to the population. Such a risk is assumed to apply for a continuous exposure to TACs over a 70-year lifetime;
- Create objectionable odors affecting a substantial number of people; or
- Result in a cumulatively considerable net increase of any criteria pollutant for which the region is designated non-attainment under an applicable national or State ambient air quality standard.

IMPACTS AND MITIGATION MEASURES

IMPACT 4.3-1 Short-Term Construction-Generated Criteria Air Pollutant and Precursor Emissions. *The short-term construction-generated emissions of PM_{10} would exceed PCAPCD's significance threshold of 82 lb/day. This would be considered a* ***significant*** *impact.*

Construction emissions are described as "short term" or temporary in duration and have the potential to represent a significant impact with respect to air quality, especially fugitive PM_{10} dust emissions. Fugitive PM_{10} dust emissions are associated primarily with ground disturbance activities during site preparation and vary as a function of such parameters as soil silt content, soil moisture, wind speed, acreage of disturbance area, and VMT on- and offsite. Exhaust emissions from employee commute trips and construction equipment also contribute to short-term increases in PM_{10} emissions but to a much lesser extent. Emissions of ozone precursor emissions

(ROG and NO_X) and CO are primarily associated with exhaust emissions from employee commute trips and construction equipment, application of architectural coatings, and asphalt paving.

With respect to the proposed project, the initial site preparation and building phases of construction would result in the temporary generation of ROG, NO_X, PM_{10}, and CO emissions from ground disturbance activities, use of off-road equipment, employee commute trips, and other miscellaneous activities (e.g., asphalt paving and the application of architectural coatings).

Short-term construction emissions of ROG, NO_X, PM_{10}, and CO were modeled using the ARB-approved URBEMIS 2002 Version 8.7 computer program as recommended by the PCAPCD. URBEMIS is designed to model construction emissions for land use development projects and allows for the input of project-specific information. Input parameters were based on default model settings and information provided in the project description. The modeled maximum daily construction emissions are summarized in Table 4.3-3 and described in more detail below and in Appendix D.

Table 4.3-3
Summary of Modeled Maximum Daily Short-term Construction-Generated Emissions

Source	ROG (lb/day)	NO_X (lb/day)	PM_{10} (lb/day)	CO (lb/day)
Initial Site Preparation Phase (Spring 2008 – Summer 2008)				
Total Unmitigated Emissions (Site Preparation)[1]	4.7	37.8	126.8	20.3
PCAPCD Significance Threshold	82	82	82	550
Exceed Threshold?	No	No	Yes	No
Building Construction Phase (Summer 2008 – Spring 2009)				
Asphalt	3.0	16.9	1.4	10.8
Building Construction	5.7	25.6	1.8	54.3
Architectural Coatings	66.6	0.1	-	0.9
Total Unmitigated Emissions (Building Construction)[1]	75.3	42.6	3.3	66.0
PCAPCD Significance Threshold	82	82	82	550
Exceed Threshold?	No	No	No	No

[1] Emissions modeled using the Urbemis2007 (v9.2) computer model, based on the proposed land uses and phasing information identified in the project description, default model settings.
Refer to Appendix D for detailed assumptions and modeling output files.
Source: Data modeled by EDAW 2007.

Based on the modeling conducted, project construction would result in worst-case maximum unmitigated daily emissions of approximately 75 lb/day of ROG, 43 lb/day of NO_X, 127 lb/day of PM_{10}, and 20 lb/day of CO. Daily unmitigated construction-generated emissions would not exceed PCAPCD's significance thresholds of 82 lb/day for ROG or NO_X or 550 lb/day for CO. However, unmitigated construction-generated emissions of PM_{10} would exceed PCAPCD's significance threshold of 82 lb/day. Thus, PM_{10} emissions could violate an air quality standard or contribute substantially to an existing or projected air quality violation, especially considering Placer County's nonattainment status. As a result, this impact is considered **significant**.

Mitigation Measure 4.3-1 Short-Term Construction-Generated Criteria Air Pollutant and Precursor Emissions.

In accordance with the PCAPCD, the applicant shall comply with all applicable rules and regulations as discussed previously, in addition to implementation of the following recommended mitigation measures during construction of the proposed project (Backus, pers. comm., 2006b).

- The applicant shall submit to the City Engineer and the PCAPCD and receive approval of a Construction Emission / Dust Control Plan prior to groundbreaking. This plan must address how the project meets the minimum requirements of sections 300 and 400 of Rule 228-Fugitive Dust.

- The applicant shall suspend all grading operations when fugitive dust emissions exceed District Rule 228-Fugitive Dust limitations.

- Fugitive dust emissions shall not exceed 40% opacity and not go beyond the property boundary at any time. If lime or other drying agents are utilized to dry out wet grading areas, the project applicant shall ensure such agents are controlled as to not to exceed District Rule 228-Fugitive Dust limitations.

- The project applicant shall ensure that construction equipment exhaust emissions shall not exceed Rule 202-Visible Emission limitations.

- The project applicant shall ensure compliance with all of PCAPCD's minimum dust requirements.

- Water shall be applied to control fugitive dust, as needed, to prevent impacts offsite. Operational water trucks shall be onsite to control fugitive dust. Construction vehicles leaving the site shall be cleaned to prevent dust, silt, mud, and dirt from being released or tracked off-site.

- PCAPCD-approved chemical soil stabilizers, vegetative mats, or other appropriate best management practices, in accordance with manufacturers' specifications, shall be applied to all-inactive construction areas (previously graded areas which remain inactive for 96 hours).

- Soil binders shall be spread on unpaved roads and employee/equipment parking areas, and streets shall be washed (e.g., wet broom) if silt is carried over to adjacent public thoroughfares.

- Open burning of any kind shall be prohibited.

- Idling time shall be minimized to five minutes or less for all diesel-fueled equipment.

- ARB diesel fuel shall be used for all diesel-powered equipment.

- The project applicant, or the prime contractor, shall submit to the District a comprehensive inventory (i.e., make, model, year, emission rating) of all the heavy-duty off-road equipment (50 horsepower or greater) that will be used an aggregate of 40 or more hours for the construction project prior to groundbreaking. The project applicant shall provide the District with the anticipated construction timeline including start date, name, and phone number of the project manager and onsite foreman prior to groundbreaking. The project applicant shall provide a plan for approval by the District demonstrating that the heavy-duty (> 50 horsepower) off-road vehicles to be used in the construction project, including owned, leased, and subcontractor vehicles, will achieve a project-wide fleet-average 20 percent NO_X reduction and 45 percent particulate reduction compared to the most recent ARB fleet average. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available. Contractors can contact PCAPCD to determine it their off-road fleet meets the requirements listed in this measure.

Level of Significance After Mitigation

Compliance with the above PCAPCD-required control measures would reduce worst-case fugitive PM_{10} dust emissions by a minimum of 50%, to approximately 64 lb/day, which is below the threshold of 82 lb/day. Therefore, implementation of the mitigation measures would reduce short-term construction-generated emissions to a less-than-significant level.

IMPACT 4.3-2 **Long-Term Operational (Regional) Criteria Air Pollutant and Precursor Emissions.** *The proposed project would increase criteria air pollutant and precursor emissions in the region above significance thresholds. Because feasible mitigation measures are not available to reduce these emissions below the significance thresholds, this impact would be considered* ***significant and unavoidable.***

Regional area- and mobile-source emissions of ROG, NO_X, PM_{10}, and CO associated with implementation of the proposed project were estimated using URBEMIS 2007 Version 9.2 computer program, which is designed to model emissions for land use development projects. URBEMIS allows land use selections that include project location specifics and trip generation rates. URBEMIS accounts for area emissions from the usage of natural gas, wood stoves, fireplaces, landscape maintenance equipment, and consumer products; and mobile sources emissions associated with trip generation. Regional area and mobile source emissions were estimated based on proposed land uses identified in the project description and trip generation rates obtained from the transportation analysis prepared for this project (Section 4.2, Traffic and Circulation). Project implementation would not include the construction or operation of any major stationary sources of emissions.

The modeled maximum daily operational emissions for winter and summer conditions are summarized in Table 4.3-4 and described in more detail below and in Appendix D.

Table 4.3-4
Summary of Modeled Maximum Daily Long-term Operational (Regional) Emissions

Source	ROG (lb/day)	NO_X (lb/day)	PM_{10} (lb/day)	CO (lb/day)
Winter				
Area (Natural Gas and Consumer Product Usage, Landscaping, and Application of Architectural Coatings)	3.6	5.3	-	4.4
Motor Vehicle	192.5	306.1	280.7	2,192.0
Total Unmitigated Emissions (Winter)[1]	196.1	311.4	280.7	2,196.4
PCAPCD Significance Threshold	82	82	82	550
Exceed Threshold?	Yes	Yes	Yes	Yes
Summer				
Area (Natural Gas and Consumer Product Usage, Landscaping, and Application of Architectural Coatings)	4.0	5.3	-	9.2
Motor Vehicle	151.6	221.4	280.7	1,916.7
Total Unmitigated Emissions (Summer)[1]	155.6	216.7	280.7	1,925.9
PCAPCD Significance Threshold	82	82	82	550
Exceed Threshold?	Yes	Yes	Yes	Yes

[1] Emissions modeled using the Urbemis2007 (v9.2) computer model, based on trip generation rates obtained from the transportation analysis prepared for this project, proposed land uses and phasing information identified in the project description, and default model settings.
Refer to Appendix D for detailed assumptions and modeling output files.
Source: Data modeled by EDAW 2007.

Based on the modeling conducted, project operations would result in worst-case maximum unmitigated daily emissions of approximately 196 lb/day of ROG, 311 lb/day of NO_X, 281 lb/day of PM_{10}, and 2,196 lb/day of CO. Daily unmitigated operational emissions would exceed PCAPCD's significance thresholds of 82 lb/day for ROG, NO_X, and PM_{10}, or 550 lb/day for CO during both the winter and summer periods. In addition, because PCAPCD's significance thresholds approximately correlate with reductions from heavy-duty vehicles and land use project emission reduction requirements in the SIP, project implementation would also be anticipated to conflict with current air quality planning efforts. As a result, this impact is considered **significant and unavoidable**. This conclusion is consistent with the 1991 City of Rocklin General Plan EIR, which concluded that mobile-source emissions associated with General Plan buildout would result in significant and unavoidable regional air quality impacts.

Area- and mobile-source emissions of GHGs would also be generated by the operation of the proposed project. Because there are no established thresholds for analyzing GHG emissions at the project level, and because the effect of GHG emissions as they relate to global climate change is inherently a cumulative and global issue, the impact of project-generated GHGs is discussed in the cumulative impact analysis included in Chapter 6 of this document.

Mitigation Measure 4.3-2 Long-Term Operational (Regional) Criteria Air Pollutant and Precursor Emissions.

The City shall require that emission control measures be incorporated into project design and operation. Such measures may include, but are not limited to, the following items:

- The project applicant shall provide transit enhancing infrastructure that includes transit shelters, benches, street lighting, route signs and displays, and/or bus turnouts/bulbs.
- The project applicant shall provide bicycle enhancing infrastructure that includes secure bicycle parking.
- The project applicant shall provide electric maintenance equipment, use solar, low-emissions, or central water heaters, increase wall and attic insulation beyond Title 24 requirements, and orient buildings to take advantage of solar heating and natural cooling, use passive solar designs, energy efficient windows (double pane and/or Low-E), highly reflective roofing materials, cool paving (high albedo pavement) and parking lot tree shading above that required by code, install photovoltaic cells, programmable thermostats for all heating and cooling systems, awnings or other shading mechanisms for windows and walkways, utilize day lighting systems such as skylights, light shelves, interior transom windows.
- Parking lot design shall include clearly marked pedestrian pathways between transit facilities and building entrances included in the design.
- The project applicant shall require that all diesel engines be shut off when not in use for longer than 5 minutes on the premises to reduce idling emissions.

Level of Significance After Mitigation

Due to the large size of the project and large number of vehicle trips generated, it is not anticipated that implementation of the mitigation measures identified above would reduce emissions to below the applicable thresholds; however, these measures would likely substantially reduce the level of emissions. In addition, because of existing nonattainment conditions of the project area for ozone and $PM_{10,}$ project implementation could still contribute substantially to an existing or projected violation of ambient air quality standards following implementation of the identified mitigation measures. Therefore, this impact would remain significant and unavoidable.

IMPACT 4.3-3 Exposure of Sensitive Receptors to Toxic Air Contaminant Emissions. *The delivery trucks associated with the proposed commercial uses have the potential to expose proposed residents (in the proposed Rocklin 60 project) along the site's eastern boundary to elevated diesel PM emissions, which are categorized as a toxic air contaminant. However, these emission levels would not exceed established significance thresholds. Therefore, this would be considered a* ***less-than-significant*** *impact.*

The exposure of sensitive receptors to emissions of TAC can occur during both the construction and operational phases of the project. Health-related impacts associated with short-term construction and long-term stationary and mobile source operational emissions are discussed separately, as follows:

Short-Term Construction

Construction of the project and associated infrastructure would result in short-term diesel exhaust emissions from on-site heavy duty equipment used in site grading and excavation, paving, and other construction activities. These emissions would be intermittent, vary through the site area, and be of a relatively short duration, probably ending long before any future Rocklin 60 homes are built and occupied. Diesel PM was identified as a TAC by the ARB in 1998. According to the ARB, the potential cancer risk from the inhalation of diesel PM, as discussed below, is a more serious risk than the potential non-cancer health impacts (ARB 2003).

The dose to which receptors are exposed is the primary factor used to determine health risk (i.e., potential exposure to TAC emission levels that exceed applicable standards). Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the maximally exposed individual. Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer period of time. According to the Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on a 70-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the project (Salinas, pers. comm., 2004). Thus, because the use of mobilized equipment would be temporary (i.e., less than 3% of the total exposure period for which risk is based upon) in combination with the dispersive properties of diesel PM (Zhu and Hinds 2002) and that project construction activities would not be atypical in comparison to similar development-type projects (i.e., no excessive material transport or associated truck travel), short-term construction activities would not result in the exposure of sensitive receptors to substantial TAC concentrations. This impact is considered **less than significant.**

On-site Mobile Sources

Operational activities that require the use of diesel-fueled vehicles for extended periods, such as the delivery areas for the commercial buildings, would generate diesel PM emissions that could expose sensitive receptors to toxic air contaminants. The diesel PM emissions generated by these uses would be produced primarily at single locations (i.e., the building loading docks) on a semi-regular basis. Idling trucks, including transportation refrigeration units (TRUs), increase diesel PM levels at these locations. Existing residences to the east would be located more than 500 feet from these emission sources. However, residents within the proposed Rocklin 60 residential development would be located within approximately 150 feet of the loading docks for the larger commercial buildings on the site. The occupants of these proposed residences may be exposed to elevated levels of diesel exhaust PM emissions on a reoccurring basis.

A Health Risk Assessment was prepared to determine the exposure levels for the future residents within the proposed Rocklin 60 residential development (Michael Brandman Associates 2007). A Health Risk Assessment requires the completion and interaction of four general steps; 1) quantify project-generated TAC emissions; 2) identify ground-level receptor locations that may be affected by the emissions; 3) perform air dispersion modeling analyses to estimate ambient pollutant concentrations at each receptor location using project TAC emissions and

representative meteorological data to define the transport of those emissions in the atmosphere; and 4) characterize and compare the calculated pollutant concentrations with the applicable health risk significance threshold.

The first step in completing the assessment includes identifying and quantifying the project's TAC air emissions sources. The sources of TAC emissions from this project are associated with the diesel PM emitted from the delivery truck traffic that would service the facility. Diesel PM emissions from various sources were calculated using information derived from the project description, forecasted delivery truck information, and mobile source emission factors from the CARB EMFAC2007 emissions factor model. Onsite emissions were calculated for delivery vehicle travel and idling time, and included the use of transportation refrigeration units for trucks servicing facilities handling perishables such as produce and frozen foods for retail or restaurant establishments. Likely onsite travel links were defined from the project entrances to the respective project buildings and emissions were calculated along each link. Delivery vehicles were assumed to idle for a maximum of 5 minutes per vehicle per day in keeping with the CARB airborne toxic control measures, which regulate truck idling time.

The assessment requires that a network of receptors be specified such that the impacts can be computed at the various locations surrounding the project. The future residences within the proposed Rocklin 60 residential development were identified as sensitive receptors. Once the TAC emission sources were identified, this information was integrated with the meteorological data into the air dispersion model to determine the offsite effects of the TAC emissions generation on these sensitive receptors.

Based on the modeling results, the lifetime excess cancer risk associated with operation of the proposed project was identified for the individual residences within the proposed Rocklin 60 residential development. The highest lifetime excess cancer risk for an individual residence was identified as 5.1 in a million. For the majority of the residences, the cancer risk level was identified as 1 in a million. These estimated cancer risk levels are conservatively based on a hypothetical individual exposed to carcinogenic emissions from the project site continuously, 24 hours per day, 365 days per year for a 70-year lifetime, which is very unlikely to occur in reality. The lifetime excess cancer risk associated with operation of the proposed project for the residences within the proposed Rocklin 60 residential development would not exceed the PCAPCD cancer risk significance level of 10 in a million. Therefore, this impact would be considered **less than significant**.

Mitigation Measure 4.3-3 Exposure of Sensitive Receptors to Toxic Air Contaminant Emissions.

No mitigation measures would be necessary.

Level of Significance After Mitigation

The proposed project would not expose future residents to TAC emissions in excess of PCAPCD standards. Therefore, implementation of the proposed project would result in a less-than-significant impact.

IMPACT 4.3-4 Long-Term Operational (Local) Mobile-Source Carbon Monoxide Emissions. *The proposed project would increase mobile-source carbon monoxide emissions in the local area. However, this increase would not cause local mobile-source CO emissions to exceed applicable standards. Therefore, this impact would be considered less than significant.*

CO concentration is a direct function of motor vehicle activity (e.g., idling time and traffic flow conditions); particularly during peak commute hours, and meteorological conditions. Under specific meteorological conditions, CO concentrations may reach unhealthy levels with respect to local sensitive land-uses such as residential areas, schools, and hospitals. As a result, the PCAPCD also recommends analysis of CO emissions at a local level.

Local mobile-source CO concentrations were assessed using a screening level procedure provided by SMAQMD, which are applicable to the project area. This screening level analysis conservatively estimates the background CO concentration in the project area and the project-generated pollutant concentration to anticipate the combined concentration level. Based on this analysis, the 1- and 8-hour background CO concentrations for the year 2009 were calculated to be 2.78 ppm and 1.39 ppm, respectively. Project-generated 1- and 8-hour CO emissions from peak hour daily trips were calculated to be 5.6 ppm and 3.92 ppm, respectively, which results in total (existing plus project) concentrations of 8.38 ppm and 5.31 ppm. Thus, the proposed project is not anticipated to result in or contribute to local CO concentrations that exceed the California 1-hour or 8-hour ambient air quality standards of 20 ppm or 9 ppm, respectively. As a result, the impact of long-term operational emissions of local CO associated with the proposed project would be considered **less than significant**.

Mitigation Measure 4.3-4 Long-Term Operational (Local) Mobile-Source Carbon Monoxide Emissions.

No mitigation is required.

Level of Significance After Mitigation

The proposed project would not generate significant mobile-source carbon monoxide emission impacts.

IMPACT 4.3-5 Exposure of Sensitive Receptor to Odorous Emissions. *The proposed project would introduce new odor sources into the area (e.g., trash receptacles). However, these odor sources would not be expected to adversely affect adjacent land uses. Therefore, this impact would be considered less than significant.*

The occurrence and severity of odor impacts depends on numerous factors, including: the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of the receptors. While offensive odors rarely cause any physical harm, they still can be very unpleasant, leading to considerable distress among the public and often generating citizen complaints to local governments and regulatory agencies. Projects with the potential to frequently expose a substantial number of members of the public to objectionable odors would be deemed to have a significant impact.

The construction of the proposed project would result in diesel exhaust emissions from on-site construction equipment. The diesel exhaust emissions would be intermittent and temporary and would dissipate rapidly from the source with an increase in distance. In addition, the project is not anticipated to result in the installation of any major odor emission sources (e.g., food processing plant, landfill, wastewater treatment facility) that would result in a potentially significant impact to the occupants of the proposed or existing off-site land uses. Although specific commercial uses have not yet been identified, uses considered to be minor sources of odors may be developed. Such sources typically include dry cleaning establishments and restaurants. Fast food restaurants have the potential to generate odors from the operation of charbroilers and deep fat fryers. In addition, on-site trash receptacles used by the new commercial land uses have the potential to create odors. However, while there is a potential for odors to occur, trash receptacles that contain odorous materials (e.g., restaurant food waste) are typically picked up on a daily basis. Also, the site tenants would be subject to PCAPCD Rule 205 regarding the control of nuisances. Consequently, the operation of the proposed project would not be expected to create objectionable odors that would affect a substantial number of people. This impact would be considered **less than significant**.

Mitigation Measure 4.3-5 Exposure of Sensitive Receptor to Odorous Emissions.

No mitigation measures are required.

Level of Significance After Mitigation

The proposed project would not generate significant odor impacts.