3.2 AIR QUALITY

This section examines the degree to which the proposed project may result in significant adverse changes to air quality. Both short-term construction emissions occurring from activities, such as site grading and construction equipment, and long-term effects related to the ongoing operation of the interpretive center are discussed in this section. This analysis focuses on air pollution from two perspectives: daily emissions and pollutant concentrations. "Emissions" refer to the quantity of pollutant released into the air, measured in pounds per day. "Concentrations" refer to the amount of pollutant material per volumetric unit of air, measured in parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$).

3.2.1 ENVIRONMENTAL SETTING

POLLUTANTS AND EFFECTS

Criteria air pollutants are defined as pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. The federal and state standards have been set at levels above which concentrations could be harmful to human health and welfare. These standards are designed to protect the most sensitive persons from illness or discomfort. Pollutants of concern include carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter 2.5 microns or less in diameter ($PM_{2.5}$), particulate matter 10 microns or less in diameter (PM_{10}), and lead (Pb). These pollutants are discussed below.

Carbon Monoxide. CO is a colorless and odorless gas formed by the incomplete combustion of fossil fuels. CO is emitted almost exclusively from motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. In urban areas such as the Project Site, automobile exhaust accounts for the majority of CO emissions. CO is a non-reactive air pollutant that dissipates relatively quickly, so ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions: primarily wind speed, topography, and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, a typical situation at dusk in urban areas between November and February.[1] The highest levels of CO typically occur during the colder months of the year when inversion conditions are more frequent. In terms of health, CO competes with oxygen, often replacing it in the blood, thus reducing the blood's ability to transport oxygen to vital organs. The results of excess CO exposure can be dizziness, fatigue, and impairment of central nervous system functions.

Ozone. O_3 is a colorless gas that is formed in the atmosphere when reactive organic gases (ROG), which includes volatile organic compounds (VOC), and nitrous oxide (NO_X) react in the presence of ultraviolet sunlight. O_3 is not a primary pollutant; it is a secondary pollutant formed by complex interactions of two

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[1] Inversion is an atmospheric condition in which a layer of warm air traps cooler air near the surface of the earth, preventing the normal rising of surface air.

pollutants directly emitted into the atmosphere. The primary sources of ROG and NO_X, the components of O_3, are automobile exhaust and industrial sources. Meteorology and terrain play major roles in O_3 formation. Ideal conditions occur during summer and early autumn, on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. The greatest source of smog-producing gases is the automobile. Short-term exposure (lasting for a few hours) to O_3 at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes.

Nitrogen Dioxide. NO_2, like O_3, is not directly emitted into the atmosphere, but is formed by an atmospheric chemical reaction between nitric oxide (NO) and atmospheric oxygen. NO and NO_2 are collectively referred to as NO_X and are major contributors to O_3 formation. NO_2 also contributes to the formation of PM_{10}. High concentrations of NO_2 can cause breathing difficulties and result in a brownish-red cast to the atmosphere with reduced visibility. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis. Some increase of bronchitis in children (two and three years old) has also been observed at concentrations below 0.3 ppm.

Sulfur Dioxide. SO_2 is a colorless, pungent gas formed primarily by the combustion of sulfur-containing fossil fuels. The main sources of SO_2 are coal and oil used in power plants and industries. Generally, the highest levels of SO_2 are found near large industrial complexes. In recent years, SO_2 concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO_2 and limits on the sulfur content of fuels. SO_2 is an irritant gas that attacks the throat and lungs. It can cause acute respiratory symptoms and diminished ventilator function in children. SO_2 can also yellow plant leaves and erode iron and steel.

Particulate Matter. Particulate matter pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter also forms when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. $PM_{2.5}$ and PM_{10} represent fractions of particulate matter. Fine particulate matter, or $PM_{2.5}$, is roughly 1/28 the diameter of a human hair. $PM_{2.5}$ results from fuel combustion (e.g., motor vehicles, power generation, and industrial facilities), residential fireplaces, and wood stoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as SO_2, NO_X, and VOC. Inhalable particulate matter, or PM_{10}, is about 1/7 the thickness of a human hair. Major sources of PM_{10} include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions.

$PM_{2.5}$ and PM_{10} pose a greater health risk than larger-size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. $PM_{2.5}$ and PM_{10} can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of substances, such as lead, sulfates, and nitrates can cause lung damage directly. These substances can be absorbed into the blood stream and cause damage elsewhere in the body. These substances can transport absorbed gases, such as chlorides or ammonium, into the lungs and cause injury. Whereas PM_{10} tends to collect in the upper portion of the respiratory system, $PM_{2.5}$ is so tiny that it can penetrate deeper into the lungs and damage lung tissues. Suspended particulates also damage and discolor surfaces on which they settle, as well as produce haze and reduce regional visibility.

Lead. Pb in the atmosphere occurs as particulate matter. Sources of lead include leaded gasoline; the manufacturers of batteries, paint, ink, ceramics, and ammunition; and secondary lead smelters. Prior to 1978, mobile emissions were the primary source of atmospheric lead. Between 1978 and 1987, the phase-out of leaded gasoline reduced the overall inventory of airborne lead by nearly 95 percent. With the phase-out of leaded gasoline, secondary lead smelters, battery recycling, and manufacturing facilities have become lead-emission sources of greater concern.

Prolonged exposure to atmospheric lead poses a serious threat to human health. Health effects associated with exposure to lead include gastrointestinal disturbances, anemia, kidney disease, and in severe cases, neuromuscular and neurological dysfunction. Of particular concern are low-level lead exposures during infancy and childhood. Such exposures are associated with decrements in neurobehavioral performance, including intelligence quotient performance, psychomotor performance, reaction time, and growth.

Toxic Air Contaminants. A substance is considered toxic if it has the potential to cause adverse health effects in humans. A toxic substance released into the air is considered a toxic air contaminants. Toxic air contaminants are identified by state and federal agencies based on a review of available scientific evidence. In the State of California, toxic air contaminants are identified through a two-step process that was established in 1983 under the Toxic Air Contaminant Identification and Control Act, Assembly Bill 1807, Tanner. This two-step process of risk identification and risk management was designed to protect residents from the health effects of toxic substances in the air.

The South Coast Air Quality Management District (SCAQMD) has a long and successful history of reducing air toxics and criteria emissions in the South Coast Air Basin. The SCAQMD has an extensive control program, including traditional and innovative rules and policies. These policies can be viewed in the SCAQMD's *Air Toxics Control Plan for the Next Ten Years* (2000).

To date, the most comprehensive study on air toxics in the Basin is the Multiple Air Toxics Exposure Study, conducted by the SCAQMD. The monitoring program measured more than 30 air pollutants, including gases and particulates. The monitoring study was accompanied by a computer modeling study in which the SCAQMD estimated the risk of cancer from breathing toxic air pollution throughout the region based on emissions and weather data. The Multiple Air Toxics Exposure Study found that the average cancer risk in the region from carcinogenic air pollutants ranges from about 870 in a million to 1,400 in a million, with an average regional risk of about 1,200 in a million.

Greenhouse Gases. Various gases in the Earth's atmosphere, classified as atmospheric greenhouse gases (GHGs), play a critical role in determining the Earth's surface temperature. Solar radiation enters the Earth's atmosphere from space and a portion of the radiation is absorbed by the Earth's surface. The Earth emits this radiation back to space, but the properties of the radiation have changed from high-frequency solar radiation to lower-frequency infrared radiation. GHGs, which are transparent to solar radiation, are effective in absorbing infrared radiation. This radiation that would have otherwise escaped back to space is now "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the Greenhouse Effect, is responsible for maintaining a habitable climate. Without the Greenhouse Effect, Earth would not be able to support life as we now know it.

Prominent GHGs contributing to the Greenhouse Effect include carbon dioxide (CO_2), methane (CH_4), O_3, water vapor, nitrous oxide (N_2O), and chlorofluorocarbons (CFCs). Human-caused emissions of these GHGs in excess of natural ambient concentrations are responsible for an enhancement of the Greenhouse Effect, which has led to a trend of unnatural warming of the Earth's climate, known as global warming or global climate change. Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with industrial/manufacturing, utility, transportation, residential, and agricultural sectors. Emissions of CO_2 are byproducts of fossil fuel combustion. Methane, a highly potent GHG, results from off-gasing associated with agricultural practices and landfills. Processes that absorb CO_2, often referred to as sinks, include uptake by vegetation and dissolution into the ocean.

Carbon dioxide-equivalent (CO_2e) is a value used to account for different GHGs having different potential to retain infrared radiation in the atmosphere and contribute to the Greenhouse Effect. This is known as the Global Warming Potential of a GHG, and is dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. For example, one ton of CH_4 has the same contribution to the Greenhouse Effect as approximately 21 tons of CO_2. Therefore, CH_4 is a much more potent GHG than CO_2. Expressing emissions in carbon-dioxide equivalents takes the Greenhouse Effect contribution of all GHG emissions and converts them to a single unit equivalent to the effect if all emissions were CO_2.

Climate change is a global problem, and GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern, respectively. The strong majority of the scientific community concurs that global warming will lead to adverse climate change effects around the globe and that the phenomenon is anthropogenic, i.e., caused by humans.

In 2004, California produced 492 million gross metric tons of CO_2e gases. Fossil fuel consumption in the transportation sector was the single largest source of California's GHG emissions in 2004, accounting for 40.7 percent of total GHG emissions in the state. This category was followed by the electric power sector (including both in-state and out-of-state sources) (22.2 percent) and the industrial sector (20.5 percent).

Various local and statewide initiatives to reduce the state's contribution to GHG emissions have raised awareness that, even though the various contributors to and consequences of global climate change are not yet fully understood, global climate change is under way and there is a real potential for severe adverse environmental, social, and economic effects over the long term. Because every nation is an emitter of GHGs, and therefore makes an incremental cumulative contribution to global climate change, cooperation on a global scale will be required to reduce the rate of GHG emissions to a level that can help slow or stop human-caused increase in average global temperatures and associated changes in climatic conditions. As such, global climate change and the Proposed Project's contribution of GHGs are discussed in Section 4.3, Cumulative Impacts of this EIR.

EXISTING AIR QUALITY

Air Pollution Climatology

The lease boundary is located within the Los Angeles County portion of the South Coast Air Basin. Ambient pollution concentrations recorded in Los Angeles County are among the highest in the four counties comprising the South Coast Air Basin.

The South Coast Air Basin is in an area of high air pollution potential due to its climate and topography. The general region lies in the semi-permanent high pressure zone of the eastern Pacific, resulting in a mild climate tempered by cool sea breezes with light average wind speeds. The South Coast Air Basin experiences warm summers, mild winters, infrequent rainfalls, light winds, and moderate humidity. This usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds. The South Coast Air Basin is a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean to the west and high mountains around the rest of its perimeter. The mountains and hills within the area contribute to the variation of rainfall, temperature, and winds throughout the region.

The South Coast Air Basin experiences frequent temperature inversions. Temperature typically decreases with height. However, under inversion conditions, temperature increases as altitude increases, thereby preventing air close to the ground from mixing with the air above it. As a result, air pollutants are trapped near the ground. During the summer, air quality problems are created due to the interaction between the ocean surface and the lower layer of the atmosphere. This interaction creates a moist marine layer. An upper layer of warm air mass forms over the cool marine layer, preventing air pollutants from dispersing upward. Additionally, hydrocarbons and NO_2 react under strong sunlight, creating smog. Light, daytime winds, predominantly from the west, further aggravate the condition by driving air pollutants inland, toward the mountains. During the fall and winter, air quality problems are created due to CO and NO_2 emissions. CO concentrations are generally worse in the morning and late evening (around 10:00 p.m.). In the morning, CO levels are relatively high due to cold temperatures and the large number of cars traveling. High CO levels during the late evenings are a result of stagnant atmospheric conditions trapping CO in the area. Since CO emissions are produced almost entirely from automobiles, the highest CO concentrations in the South Coast Air Basin are associated with heavy traffic. NO_2 concentrations are also generally higher during fall and winter days.

Local Climate

The mountains and hills within the South Coast Air Basin contribute to the variation of rainfall, temperature, and winds throughout the region. Within the lease boundary and its vicinity, the average wind speed is approximately 5.3 miles per hour, with calm winds occurring approximately 7.9 percent of the time (SCAQMD 2008a). The annual average temperature in the project vicinity is 65 degrees Fahrenheit (°F). The lease boundary experiences an average winter temperature of approximately 58°F and an average summer temperature of approximately 71°F. Total precipitation in the vicinity of the lease boundary averages approximately 15 inches annually. Precipitation occurs mostly during the winter and relatively infrequently during the summer. Precipitation averages approximately 9 inches during the winter, approximately 4 inches during the spring, approximately 2 inches during the fall, and less than one inch during the summer (Western Region Climate Center 2008).

Air Monitoring Data

The SCAQMD monitors air quality conditions at 38 locations throughout the South Coast Air Basin. The closest air quality monitoring station is at Pico Rivera, identified by SCAQMD as the South San Gabriel Valley source-receptor area, approximately 3 miles southwest of the lease boundary. Historical data from South San Gabriel/Pico Rivera Monitoring Station were used to characterize existing conditions in the vicinity of the lease boundary. Criteria pollutants monitored at the South San Gabriel/Pico Rivera Monitoring Station include O_3, CO, NO_2, and $PM_{2.5}$. Table 3.2-1 shows pollutant levels, the state and federal standards, and the number of exceedances recorded at the South San Gabriel/Pico Rivera Monitoring Station from 2006 to 2008. The California Ambient Air Quality Standards for the criteria pollutants are also shown in the table. As shown in Table 3.2-1, criteria pollutants CO and NO_2, did not exceed the California Ambient Air Quality Standards during the 2006 through 2008 period. However, the one-hour state standard for O_3 was exceeded 6 to 9 times during this period, and the eight-hour state standard for O_3 was exceeded 9 to 12 times. Additionally, the annual state standard for $PM_{2.5}$ was exceeded in 2005, 2006 and 2007.

TABLE 3.2-1 AMBIENT AIR QUALITY AT THE SOUTH SAN GABRIEL/ PICO RIVERA MONITORING STATION

Pollutant	Pollutant Concentration & Standards	2006	2007	2008
Ozone	Maximum 1-hr Concentration (ppm)	0.130	0.0135	0.0107
	Days > 0.09 ppm (state 1-hr standard)	9	6	6
	Maximum 8-hr Concentration (ppm)	0.095	0.100	0.094
	Days > 0.070 ppm (state 8-hr standard)	9	9	12
Carbon Monoxide	Maximum 1-hr concentration (ppm)	3	5	--
	Days > 20 ppm (state1-hr standard)	0	0	0
	Maximum 8-hr concentration (ppm)	2.7	2.9	1.9
	Days > 9.0 ppm (state 8-hr standard)	0	0	0
Nitrogen Dioxide	Maximum 1-hr Concentration (ppm)	0.10	0.11	0.09
	Days > 0.18 ppm (state 1-hr standard)	0	0	0
PM_{10}[1]	Maximum 24-hr concentration ($\mu g/m^3$)	--	--	--
	Estimated Days > 50 $\mu g/m^3$ (state 24-hr standard)	--	--	--
$PM_{2.5}$	Maximum 24-hour concentration ($\mu g/m^3$)	72.2	63.6	40.9
	Annual Average ($\mu g/m^3$)	16.6	16.6	--
	Exceed State Standard (12 $\mu g/m^3$)?	Yes	Yes	Yes
Sulfur Dioxide	Maximum 24-hr Concentration (ppm)	--	--	--
	Days > 0.04 ppm (state 24-hr standard)	--	--	--

-- Insufficient data or no data available to determine the value.
[1] PM_{10} and sulfur dioxide are not monitored at the Pico Rivera station.
Source: SCAQMD 2008b.

SENSITIVE RECEPTORS

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. The California Air Resources Board (ARB) has identified the following groups who are most likely to be affected by air pollution: children under 14, the elderly over 65 years of age, athletes, and people with cardiovascular and chronic respiratory diseases. According to the SCAQMD, sensitive receptors include residences, schools, playgrounds, child care centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes.

Sensitive air quality receptors surrounding the project vicinity include residential uses to the west, South El Monte High School to the north, and park users at the lease boundary and within the Natural Area to the south, east, and west. Additionally, once the interpretive center is in operation, sensitive receptors would be utilizing the facility. Sensitive receptors within the vicinity of the lease boundary include the following:

- The multi-family homes west of the lease boundary and south of Durfee Avenue. The closest point of these homes is approximately 55 feet west of the lease boundary. There is a commercial building between the homes and the lease boundary of the interpretive center.

- South El Monte High School across from the lease boundary on the north side of Durfee Avenue. The closest point from the construction impact area to the athletic fields is approximately 100 feet; it is approximately 250 feet to the nearest school building.

- During construction and when construction has been completed, site visitors and staff would be sensitive receptors.

3.2.2 Regulatory Setting

The federal Clean Air Act governs air quality in the United States. In addition to being subject to the requirements of federal Clean Air Act, air quality in California is also governed by more stringent regulations under the California Clean Air Act. At the federal level, federal Clean Air Act is administered by the U.S. Environmental Protection Agency (EPA). In California, the California Clean Air Act is administered by ARB at the state level and by the air quality management districts and air pollution control districts at the regional and local levels.

United States Environmental Protection Agency. EPA is responsible for enforcing the federal Clean Air Act. EPA is also responsible for establishing the National Ambient Air Quality Standards. National Ambient Air Quality Standards are required under the 1970 Clean Air Act and subsequent amendments. EPA regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain types of locomotives. EPA has jurisdiction over emission sources outside state waters (e.g., beyond the outer continental shelf) and establishes various emission standards, including those for vehicles sold in states other than California. Automobiles sold in California must meet stricter emission standards established by ARB.

California Air Resources Board. ARB, which became part of the California Environmental Protection Agency in 1991, is responsible for meeting the state requirements of the federal Clean Air Act, administering the California Clean Air Act, and establishing the California Ambient Air Quality Standards. The California Clean Air Act, as amended in 1992, requires all air districts in the state to endeavor to achieve and maintain the California Ambient Air Quality Standards. The California Ambient Air Quality Standards are generally more stringent than the corresponding federal standards and incorporate additional standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles. ARB regulates mobile air pollution sources, such as motor vehicles. ARB is responsible for setting emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. ARB established passenger vehicle fuel specifications, which became effective in March 1996. ARB oversees the functions of local air pollution control districts and air quality management districts, which in turn, administer air quality activities at the regional and county levels.

South Coast Air Quality Management District. The SCAQMD monitors air quality within the project area. The SCAQMD has jurisdiction over an area of 10,743 square miles, consisting of Orange County;

the non-desert portions of Los Angeles, Riverside, and San Bernardino counties; and the Riverside County portion of the Salton Sea Air Basin and Mojave Desert Air Basin. The 1977 Lewis Air Quality Management Act created the SCAQMD to coordinate air quality planning efforts throughout Southern California. This act merged four county air pollution control agencies into one regional district to better address the issue of improving air quality in Southern California. Under the act, renamed the Lewis-Presley Air Quality Management Act in 1988, the SCAQMD is the agency principally responsible for comprehensive air pollution control in the region. Specifically, the SCAQMD is responsible for monitoring air quality, as well as planning, implementing, and enforcing programs designed to attain and maintain state and federal ambient air quality standards in the district. Programs that were developed include air quality rules and regulations that regulate stationary sources, area sources, point sources, and certain mobile source emissions. SCAQMD is also responsible for establishing stationary source permitting requirements and for ensuring that new, modified, or relocated stationary sources do not create net emission increases.

The South Coast Air Basin is a subregion of the SCAQMD and covers an area of 6,745 square miles. The South Coast Air Basin includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties. The South Coast Air Basin is bounded by the Pacific Ocean to the west; the San Gabriel, San Bernardino and San Jacinto Mountains to the north and east; and the San Diego County line to the south.

NATIONAL AND CALIFORNIA AMBIENT AIR QUALITY STANDARDS AND ATTAINMENT STATUS

As required by the federal Clean Air Act, the National Ambient Air Quality Standards have been established for seven major air pollutants: CO, NO_2, O_3, $PM_{2.5}$, PM_{10}, SO_2, and Pb. The federal Clean Air Act requires EPA to designate areas as either attainment, nonattainment, or maintenance (previously nonattainment and currently attainment) for each criteria pollutant based on whether the National Ambient Air Quality Standards have been achieved. The federal standards are summarized in Table 3.2-2. The EPA has classified the South Coast Air Basin as, maintenance for CO and nonattainment for O_3, $PM_{2.5}$, and PM_{10}. As discussed above, the California Ambient Air Quality Standards are generally more stringent than the corresponding federal standards (National Ambient Air Quality Standards) and, therefore, are used as the comparative standard in the air quality analysis contained in this report. The state and federal standards are summarized in Table 3.2-2.

TABLE 3.2-2 NATIONAL AND CALIFORNIA AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	NAAQS[1] Primary[3]	NAAQS[1] Secondary[4]	CAAQS[2] Concentration[5]
Ozone (O_3)[6]	1-Hour	–	Same as Primary Standard	0.09 ppm (180 µg/m^3)
	8-Hour	0.075 ppm (147 µg/m^3)		0.070 ppm (137 µg/m^3)[9]
Carbon Monoxide (CO)	8-Hour	9 ppm (10 mg/m^3)	None	9.0 ppm (10 mg/m^3)
	1-Hour	35 ppm (40 mg/m^3)		20 ppm (23 mg/m^3)
	8-Hour (Lake Tahoe)	–	–	6 ppm (7 mg/m^3)
Nitrogen Dioxide (NO_2)	Annual Average	0.053 ppm (100 µg/m^3)	Same as Primary Standard	0.030 ppm (57 µg/m^3)[10]
	1-Hour	–		0.18 ppm (339 µg/m^3)[10]
Sulfur Dioxide (SO_2)	Annual Average	0.030 ppm (80 µg/m^3)	–	–
	24-Hour	0.14 ppm (365 µg/m^3)	–	0.04 ppm (105 µg/m^3)
	3-Hour	–	0.5 ppm (1300 µg/m^3)	–
	1-Hour	–	-	0.25 ppm (655 µg/m^3)
Respirable Particulate Matter (PM_{10})[7]	24-Hour	150 µg/m^3	Same as Primary Standard	50 µg/m^3
	Annual Arithmetic Mean	Revoked		20 µg/m^3 note 7
Fine Particulate Matter ($PM_{2.5}$)[8]	24-Hour	35 µg/m^3	Same as Primary Standard	–
	Annual Arithmetic Mean	15 µg/m^3		12 µg/m^3
Lead (Pb)	30-Day Average	–	–	1.5 µg/m^3
	Calendar Quarter	1.5 µg/m^3	Same as Primary Standard	–
	Rolling 3-Month Average	0.15 µg/m^3	Same as Primary Standard	–
Hydrogen Sulfide (H_2S)	1-Hour	No Federal Standards		0.03 ppm (42 µg/m^3)
Sulfates (SO_4)	24-Hour			25 µg/m^3
Visibility Reducing Particles	8-Hour (10 AM to 6 PM, Pacific Standard Time)			Extinction coefficient of 0.23 per km-visibility of ten miles or more (0.07/30 miles for Lake Tahoe) due to particles when the relative humidity is less than 70 percent.
Vinyl chloride[9]	24-Hour			0.01 ppm (26 µg/m^3)

1 NAAQS (other than O_3, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The O_3 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. For PM_{10}, the 24-hour standard 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 one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent 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 Ambient Air Quality Standards for O_3, CO (except Lake Tahoe), SO_2 (1- and 24-hour), NO_2, 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.

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

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

5 Concentration expressed first in units in which it was promulgated. Ppm in this table refers to ppm by volume or micromoles of pollutant per mole of gas.

6 On June 15, 2005, the 1-hour ozone standard was revoked for all areas except the 8-hour ozone nonattainment Early Action Compact Areas (those areas do not yet have an effective date for their 8-hour designations). Additional information on federal ozone standards is available at http://www.epa.gov/oar/oaqps/greenbk/index.html.

7 Due to a lack of evidence linking health problems to long-term exposure to coarse particle pollution, the EPA revoked the annual PM_{10} standard on December 17, 2006.

8 Effective December 17, 2006, the EPA lowered the $PM_{2.5}$ 24-hour standard from 65 µg/m^3 to 35 µg/m^3.

9 The 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.

10 The nitrogen dioxide ambient air quality standard was amended to lower the 1-hr standard to 0.18 ppm and establish a new annual standard of 0.030 ppm. These changes became effective March 20, 2008.

ppm = parts per million; µg/m^3 = micrograms per cubic meter; mg/m^3 = milligrams per cubic meter; km = kilometers
Source: ARB 2008a.

The California Clean Air Act requires ARB to designate areas within California as either attainment or non-attainment for each criteria pollutant based on whether the California Ambient Air Quality Standards have been achieved. Under the California Ambient Air Quality Standards, areas are designated as non-attainment for a pollutant if air quality data shows that a state standard for the pollutant was violated at least once during the previous three calendar years. Exceedances that are affected by highly irregular or infrequent events are not considered violations of a state standard and are not used as a basis for designating areas as nonattainment. Under the California Ambient Air Quality Standards, the Los Angeles County portion of the South Coast Air Basin is designated as a nonattainment area for O_3, $PM_{2.5}$, and PM_{10} (ARB 2008b). Attainment status for the South Coast Air Basin is summarized in Table 3-2.3.

TABLE 3.2-3 ATTAINMENT FOR THE SOUTH COAST AIR BASIN

Pollutant	Attainment Status	
	Federal	State
O_3 (1[1]- and 8-hour)	Nonattainment	Nonattainment
PM_{10}	Nonattainment	Nonattainment
$PM_{2.5}$	Nonattainment	Nonattainment
CO	Attainment/Maintenance	Attainment
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment
Pb	Attainment	Attainment

[1] Federal 1-hour O_3 repealed by law with implementation of the 8-hour standard.
Source: EPA 2008b; ARB 2008b.

3.2.3 ENVIRONMENTAL IMPACTS

METHODOLOGY

This air quality analysis is consistent with the methods described in the SCAQMD *CEQA Air Quality Handbook* (1993 edition), as well as the updates to the *CEQA Air Quality Handbook*, as provided on the SCAQMD website (SCAQMD 1993; SCAQMD 2008c).

Regional and localized construction emissions were analyzed for the Proposed Project. Construction emissions (i.e., demolition, site preparation, and building construction) were calculated using the ARB's URBEMIS2007 model (Version 9.2.4). Regional emissions were compared to the SCAQMD regional thresholds to determine project impact significance. The localized construction analysis followed guidelines published by the SCAQMD in the *Localized Significance Methodology for CEQA Evaluations* (SCAQMD 2003). In January 2005, the SCAQMD supplemented the SCAQMD LST (localized significance threshold) Guidance Document with Sample Construction Scenarios for Projects Less than Five Acres in Size (SCAQMD 2005).

URBEMIS2007 was also used to calculate operational emissions (i.e., mobile and area). URBEMIS allows land use data entries that include project location specifics and trip generation rates. URBEMIS accounts for area-source emissions from the use of natural gas, wood stoves, fireplaces, landscape maintenance equipment, and consumer products; and mobile-source emissions associated with vehicle trip generation.

The proposed project does not contain lead emissions sources. Therefore, emissions and concentrations related to this pollutant are not analyzed in this report.[2]

Localized CO emissions may occur off site under conditions of severe congestion at major intersections. The Transportation Project-Level Carbon Monoxide Protocol, UCD-ITS-97-21, University of California, Davis, December 1997, provides procedures and guidelines for use by agencies to evaluate the potential local level CO impacts of a transportation project. The procedures may also be applied to a development project. The Transportation Project-Level Carbon Monoxide Protocol provides a methodology for determining the level of analysis, if any, required on a project. According to the Transportation Project-Level Carbon Monoxide Protocol described above, projects may worsen air quality if they significantly increase the percentage of vehicles in cold start modes (i.e., the starting of a vehicle after at least one hour of non-operation), defined as an increase in the number of vehicles operating in a cold start mode of 2 percent or more; those that significantly increase traffic volumes, defined as an increase of 5 percent over existing volumes; and those that worsen traffic flow, defined for intersections, as increasing average delay at signalized intersections operating at Level of Service E or F. The increased volume and cold start criteria are of concern where projects have concentrated traffic generation, such as at large residential developments or office buildings. A residential development would increase cold starts at nearby intersections in the morning peak hour. An office building would increase cold starts at nearby intersections in the evening peak hour.

THRESHOLDS OF SIGNIFICANCE

As part of the Initial Study (see Appendix A), it was determined that the proposed project would not conflict with or obstruct implementation of the applicable air quality management plan or create objectionable odors. Accordingly, these issues are not further analyzed in the EIR.

The proposed project would have a significant effect on air quality if it would:

- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors); or

[2] Prior to 1978, mobile emissions were the primary source of lead resulting in air concentrations. Between 1978 and 1987, the phase-out of leaded gasoline reduced the overall inventory of airborne lead by nearly 95 percent. Currently, industrial sources are the primary source of lead resulting in air concentrations. Since the Proposed Project does not contain an industrial component, lead emissions are not analyzed in this EIR.

- Expose sensitive receptors to substantial pollutant concentrations.

Because of the SCAQMD's regulatory role in the South Coast Air Basin, the significance thresholds and analysis methodologies in the SCAQMD's CEQA Air Quality Handbook are used in evaluating project impacts (SCAQMD 2008c). Specifically, the proposed project would result in a significant construction air quality impact if the following would occur:

  - Daily regional construction emissions were to exceed SCAQMD construction emissions thresholds for VOC, NO_X, CO, SO_X, $PM_{2.5}$, or PM_{10}, as presented in Table 3.2-4;

TABLE 3.2-4 SCAQMD DAILY CONSTRUCTION EMISSIONS THRESHOLDS

Criteria Pollutant	Regional Emissions (Pounds Per Day)
Volatile Organic Compounds (VOC)	75
Nitrogen Oxides (NO_X)	100
Carbon Monoxide (CO)	550
Sulfur Oxides (SO_X)	150
Fine Particulates ($PM_{2.5}$)	55
Particulates (PM_{10})	150

Source: SCAQMD 2008c.

  - Daily on-site construction emissions were to exceed the applicable localized significance thresholds discussed in Section
  - Daily operational emissions were to exceed SCAQMD operational emissions thresholds for VOC, NO_X, CO, SO_X, $PM_{2.5}$, or PM_{10}, as presented in Table 3.2-5;

TABLE 3.2-5 SCAQMD DAILY OPERATIONAL EMISSIONS THRESHOLDS

Criteria Pollutant	Pounds Per Day
Volatile Organic Compounds (VOC)	55
Nitrogen Oxides (NO_X)	55
Carbon Monoxide (CO)	550
Sulfur Oxides (SO_X)	150
Fine Particulates ($PM_{2.5}$)	55
Particulates (PM_{10})	150

Source: SCAQMD 2008c.

  - Project-related traffic causes CO concentrations at study intersections to violate the California Ambient Air Quality Standards for either the one- or 8-hour period. The California Ambient Air Quality Standards for the one- and 8-hour periods are 20.0 ppm and 9.0 ppm, respectively. If CO concentrations currently exceed the California Ambient Air Quality Standards; or

- The proposed project would generate significant emissions of toxic air contaminants.

IMPACT ANALYSIS

AIR-1: *During the construction phase of the proposed project, pollutant emissions would not exceed the SCAQMD significance thresholds.*

The primary source of air pollutants during construction would be the engine exhaust from construction equipment and dust from grading and earthmoving operations. The operation of construction equipment and vehicles would result in emissions of ROC, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$ Emission estimates were calculated using the URBEMIS model as described above. As stated in the project description, the construction is assumed to start in October 2011, and demolition, site preparation, and grading are assumed to occur in the first 6 months. The construction of the interpretive center, open air classroom, and covered outdoor classroom would follow and take approximately one year to complete. Assumptions for the equipment used in each phase, volumes of demolition removal and fill import, and other factors are included in the URBEMIS input-output data sheets in Appendix B. The URBEMIS model allows overlapping of phases. In Table 3.2-6, there are periods when building construction overlaps with paving, and with architectural coating (painting). It is assumed that creation of the riparian/wetland area would continue and maintenance building beyond the grading phase; therefore, grading equipment was included in the emissions modeling during the building phase. It is mandatory for all construction projects in the South Coast Air Basin to comply with SCAQMD Rule 403 for fugitive dust (2005). Specifically, Rule 403 control requirements include, but are not limited to, applying water in sufficient quantities to prevent the generation of visible dust plumes, applying soil binders to uncovered areas, re-establishing ground cover as quickly as possible, utilizing a wheel washing system to remove bulk material from tires and vehicle undercarriages before vehicles exit the lease boundary, and maintaining effective cover over exposed areas. The calculations for the proposed project construction-related air emissions include dust suppression measures in compliance with Rule 403 (SCAQMD 2005).

TABLE 3.2-6 CONSTRUCTION EMISSIONS

Phase and Year of Construction	ROC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$	CO_2
	Emissions - Pounds per day						
Demolition – October 2011	1	11	7	<1	5	2	1,384
Grading – October 2011 – March 2012	3	21	12	<1	9	3	2,102
Building and Paving - March 2012	5	29	23	<1	2	2	3,396
Building w/o Paving or Coating - April – December 2012	3	18	14	<1	1	1	2,111
Building w/o Paving or Coating – January -- February 2013	3	17	14	<1	1	1	2,111
Building during coating - February - March 2013	24	17	14	<1	1	1	2,140
Maximum daily construction emissions	24	29	23	<1	9	3	3,396
SCAQMD Daily Thresholds	*75*	*100*	*550*	*150*	*150*	*55*	*None*
Exceed threshold?	**No**	**No**	**No**	**No**	**No**	**No**	**N/A**

As shown in Table 3.2-6, emissions of all criteria pollutants would not exceed the SCAQMD daily emissions thresholds and the regional construction emissions impact would be less than significant.

AIR-2: *During the operational phase, regional pollutant emissions would not exceed the SCAQMD daily significance thresholds.*

Operational emissions come from area sources and mobile sources. Area sources include natural gas for space heating and water heating, gasoline-powered landscaping and maintenance equipment, consumer products such as household cleaners, and architectural coatings for routine maintenance. Mobile sources are vehicle trips that would be made by proposed project visitors and staff. Estimated trip generation numbers for the proposed project are provided in the traffic study (see Appendix F). Regional emissions are the total emissions attributed to the proposed project operations, and were calculated using the URBEMIS model. The year of analysis is 2013, the first year of operations, which would have the greatest emissions. Emissions in subsequent years would be less because of the continuing improvement in vehicle emissions and the retirement of older vehicles. URBEMIS defaults were assumed for fleet composition and trip lengths. The results of the calculations for the proposed project operations-related air emissions are shown in Table 3.2-7. The URBEMIS input-output data sheets are in Appendix B.

TABLE 3.2-7 REGIONAL OPERATIONS EMISSIONS

Sources - 2013	ROC	NO_X	CO	SO_x	PM_{10}	$PM_{2.5}$	CO_2
	Emissions – Pounds per Day						
Area sources	<1	<1	3	0	<1	<1	173
Mobile sources	7	11	79	<1	17	3	10,073
Total Operations Emissions	7	11	82	<1	17	3	10,246
SCAQMD Significance Screening Thresholds- from Table 3.2-4	*55*	*55*	*550*	*150*	*150*	*55*	*None*
Exceed threshold?	**No**	**No**	**No**	**No**	**No**	**No**	**N/A**

Note: Values shown are highest for summer or winter operation.

As shown in Table 3.2-7, emissions of all criteria air pollutants would be less than the SCAQMD daily emissions thresholds. Accordingly, the regional emissions impact during operation of the proposed project would be less than significant, and no mitigation measures are required.

AIR-3: *The proposed project would not expose sensitive receptors to substantial pollutant concentrations from on-site emissions of criteria pollutants, off-site emissions of CO, toxic air contaminants, or odors.*

LOCAL EXPOSURE TO CRITERIA POLLUTANTS

Construction

As described in the methodology section above, the SCAQMD developed screening tables for evaluating localized impacts from NO_2, CO, PM_{10}, and $PM_{2.5}$ based on the thresholds shown in the California Ambient Air Quality for Criteria Pollutants section of Table 3.2-2. The closest sensitive receptors to the lease boundary are the homes west of the western site boundary. The distance from the approximate center of the construction area to the homes is 200 feet. Table 3.2-8 shows the calculated on-site constructions emissions data and threshold values for each pollutant. As shown in Table 3.2-8, all emissions values would be less than the LST thresholds. The impact would be less than significant, and no mitigation measures would be required.

TABLE 3.2-8 LOCAL EMISSIONS ANALYSIS

Pollutant	Maximum Daily Emissions[1] (lbs/day)	LST Threshold[2] (lbs/day)	Exceed Threshold?
NO_x	28	176/100[3]	No
CO	19	1984/550[3]	No
PM_{10}	9	43	No
$PM_{2.5}$	3	12	No

[1] Emissions are limited to those generated on site; see URBEMIS data sheets, Appendix A. Maximum on-site NOx and CO emissions are during Building and Paving; maximum PM_{10} and $PM_{2.5}$ emissions are during grading.
[2] LST thresholds for construction from SCAQMD for 5-acre site and 50 meter source-receptor distance in source-receptor area 11, South San Gabriel Valley. If project on-site construction emissions do not generate emissions exceeding the thresholds for 5-acre projects; they will likely meet LST guidelines for a 7-acre site with an even larger margin of safety
[3] LST thresholds for NOx and CO are higher than SCAQMD mass emissions thresholds; therefore the lower numbers, which are the mass emissions thresholds, apply.
Source: SCAQMD, 2005; SCAQMD 2006

With respect to exposure of persons to dust and particulates, construction on the proposed project is required to be in compliance with SCAQMD Rule 403, Fugitive Dust. This rule requires, among other measures, that

- No person shall cause or allow the emissions of fugitive dust from any active operation, open storage pile, or disturbed surface area such that the dust remains visible in the atmosphere beyond the property line of the emission source; and

- No person shall conduct active operations without utilizing the applicable best available control measures included in Table 1 of this Rule to minimize fugitive dust emissions from each fugitive dust source type within the active operation.

The application of SCAQMD Rule 403 compliant dust control measures would prevent exposure of persons to harmful quantities of dust and particulates. The impact would be less than significant.

Operations

There would be negligible on-site emissions of NO_x, CO, PM_{10}, and $PM_{2.5}$ during operation of the proposed project. The local impact to sensitive receptors would be less than significant.

OFF-SITE GENERATION OF CO HOT SPOTS

The proposed project traffic study indicates that the signalized intersection of Durfee Avenue and Peck Road would operate at Level of Service E during the morning peak hour without the proposed project in 2012, and that the addition of proposed project traffic would increase the delay at the intersection (see Traffic Study in Appendix F). In accordance with the Transportation Project-Level Carbon Monoxide Protocol, a screening analysis is one method to ascertain projected impacts. To simplify the analysis, various air quality agencies in California have developed conservative screening methods. The SCAQMD has not developed CO screening criteria; therefore, the methods of the Sacramento Metropolitan Air Quality Management District are used (2004). A screening analysis for potential CO impacts at a generalized intersection is shown in Table 3.2-9.

TABLE 3.2-9 CO SCREENING FOR A GENERALIZED LOCAL INTERSECTION

Concentration (ppm)	1-Hour Standard	8-Hour Standard
Background[1]	5.0	N/A
Project-Related[2]	0.4	N/A
Anticipated Total[3]	5.4	3.8
National Ambient Air Quality Standards	35	9.0
California Ambient Air Quality Standards	20	9.0
Exceed standards?	No	No

1 Highest value from Table 3.2-1.
2 Peak hour trip generation is 83 vehicles in the morning peak hour. CO contribution would be estimated at 0.6 ppm.
3 Eight-hour concentration assumed to be 0.7 times one-hour concentration.
Source: Sacramento Metropolitan Air Quality Management District 2004.

The screening is based on the background concentration of CO and a conservative estimate of project-related CO as a function of peak hour trip generation. As shown in the table, the anticipated one-hour and 8-hour CO concentrations would be less than the national and state standards. The proposed project would not create a CO hot spot; the impact would be less than significant.

TOXIC AIR CONTAMINANTS

Construction

The principal toxic air contaminant of concern for proposed project construction is diesel particulate matter. Diesel particulate matter would be emitted in the exhaust of diesel engine construction equipment. During construction, there would be persons at the residential and commercial uses adjacent to the west of the lease boundary, and at South El Monte High School across Durfee Avenue to the north of the lease boundary. The doses to which receptors are exposed are 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, 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 proposed project. Thus, because the use of diesel engine construction equipment on site would be limited to 18 months, exposure would occur less than 2.5 percent of the 70-year exposure period. Short-term construction activities would result in less than significant impact related to exposure of sensitive receptors to substantial TAC emissions. In addition, the following best management practice is included in the proposed project to further minimize diesel particulate matter exposure; see Section 2.8 of this EIR.

- Construction equipment staging areas will be located as far as feasible from the residences to the west of the site and from South El Monte High School.

Operations

Long-term exposure to diesel particulate matter is of concern if land uses are located near facilities that have large concentrations of diesel engine vehicles, such as a bus terminal or a trucking center, or within 500 feet of a freeway or an urban roadway with a traffic volume of 100,000 vehicles per day (ARB 2005). The project site is not located near any of those land uses or roadways. The proposed project would not include any new significant sources of TAC emissions. Vehicles coming to the site would be a negligible source of TAC emissions. As shown in Appendix F of this EIR, there would be an estimated 1,474 total daily trips to the site, and most of these vehicles would be gasoline-engine powered, with a small fraction of diesel engines. This volume is small compared with the ARB threshold value of 100,000 vehicles per day.

Thus, short-term construction and long-term operational sources would not expose sensitive receptors to substantial TAC concentrations. As a result, exposure of sensitive receptors to substantial concentrations of pollutants would be less than significant.

AIR-4: *Construction and operation of the proposed project would not result in a cumulatively considerable net increase of any criteria pollutant for which the region is nonattainment under an applicable federal or state ambient air quality standard*

The Basin is a federal or state nonattainment area for O_3, PM_{10}, and $PM_{2.5}$. This impact is a regional phenomenon. Thus, past, present, and probable future projects that emit ROG, NO_x, PM_{10}, and $PM_{2.5}$ contribute to this impact. The planning document that describes the impacts is the SCAQMD Air Quality Management Plan. The Air Quality Management Plan includes measures designed to reduce emissions and achieve attainment in future years. In order to limit new sources of emissions to levels that would not interfere with the attainment plans, the SCAQMD requires permits for stationary sources and sets significance thresholds for development projects. A project that exceeds the significance thresholds would be considered to have both a significant direct impact and a considerably cumulative impact to air quality.

As shown in Tables 3.2-6 and 3.2-7, the emissions generated by the proposed project would not exceed the SCAQMD thresholds during construction or operation, and would not result in a direct impact to air quality. The construction and operations emissions would make a cumulative contribution to the current nonattainment status. Construction emissions of NO_x would be less than 35 percent of the applicable threshold and emissions of ROG, PM_{10}, and $PM_{2.5}$ would be lesser proportions of their respective thresholds. Operations emissions of the nonattainment pollutants would be less than 25 percent of their respective thresholds. As all emissions would not approach the significance threshold values, the contribution to the existing and future air quality would not be considerable. The impact would be less than significant.

3.2.4 Mitigation Measures

No mitigation measures are required.

3.2.5 Significance after Mitigation

Air quality impacts would be less than significant.