4.2 AIR QUALITY

This section evaluates the potential impacts on air quality resulting from implementation of the proposed project. This includes the potential for the proposed project to conflict with or obstruct implementation of the applicable air quality plan, violate an 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 proposed project region is in nonattainment, expose sensitive receptors to substantial pollutant concentrations, or create objectionable odors affecting a substantial number of people.

Data used to prepare this section were taken from various sources, including the South Coast Air Quality Management District (SCAQMD) CEQA Air Quality Handbook, the SCAQMD 2007 Air Quality Management Plan (AQMP), the SCAQMD Air Quality Analysis Guidance Handbook, the City of San Bernardino General Plan (General Plan) (City of San Bernardino 2005), the Traffic Impact Analysis (TIA) and update memorandum prepared for the project by Crain & Associates (Appendix L2), and the operational Health Risk Assessments prepared for the project (Appendix C). Calculation data used in this air quality analysis are included in Appendix B. Full bibliographic entries for all referenced materials and communication are provided in Section 4.2.5 (References).

No comment letters related to aesthetics were received in response to the notice of preparation (NOP) circulated on August 3, 2007, for the proposed project.

4.2.1 Environmental Setting

Climate

The City of San Bernardino is located in San Bernardino County, which is within the South Coast Air Basin (Basin). This area includes all of Orange County and the nondesert portions of Los Angeles, San Bernardino, and Riverside Counties. The regional climate within the Basin is considered semi-arid and is characterized by warm summers, mild winters, infrequent seasonal rainfall, moderate daytime onshore breezes, and moderate humidity. The air quality within the Basin is influenced by a wide range of emissions sources, such as dense population centers, heavy vehicular traffic, and industry, and meteorology. The Basin is also basin-shaped, with the surrounding mountains trapping the air and its pollutants in the valleys below.

The annual average temperature varies little throughout the Basin, ranging from the low to middle 60s, measured in degrees Fahrenheit (°F). Coastal areas have a more pronounced oceanic influence, and show less variability in annual minimum and maximum temperatures than inland areas. The City of San Bernardino is located in the Central San Bernardino Valley in San Bernardino County, which is in the northern portion of the Basin. The climatological monitoring station closest to the project site that monitors temperature and precipitation is the San Bernardino station (WRCC 2010), which is located approximately 7 miles southeast of the project site. The annual average maximum temperature recorded

for the 111-year period between 1893 and 2004 at this station is 79.9°F, and the annual average minimum is 48.2°F. January and December are typically the coldest months in this area of the Basin.

Although the climate of the Basin can be characterized as semi-arid, the air near the land surface is quite moist on most days because of the presence of a marine layer. This shallow layer of sea air is an important modifier of Basin climate. Humidity restricts visibility in the Basin. The annual average relative humidity is 71 percent along the coast and 59 percent inland. Because the ocean effect is dominant, periods of heavy early morning fog are frequent and low stratus clouds are a characteristic feature. These effects decrease with distance from the coast.

The majority of annual rainfall in the Basin occurs between November and April. Summer rainfall is minimal and generally limited to scattered thundershowers in coastal regions and slightly heavier showers in the eastern portion of the Basin, along the coastal side of the mountains. Average rainfall measured at the San Bernardino climatological station for the 111-year period between 1893 and 2004 varied from 3.25 inches in February to 0.04 inch or less in July, with an average annual total of approximately 16.12 inches (WRCC 2010). The influence of rainfall on the contaminant levels in the Basin is minimal.

The Basin experiences a persistent temperature inversion, which is characterized by increasing temperature with increasing altitude. This inversion limits the vertical dispersion of air contaminants, holding them relatively near the ground. As the sun warms the ground and the lower air layer, the temperature of the lower air layer approaches the temperature of the base of the inversion (upper) layer until the inversion layer finally breaks, allowing vertical mixing with the lower layer. The mixing height for this inversion structure is normally situated 1,000 to 1,500 feet above mean sea level.

The vertical dispersion of air contaminants in the Basin is also affected by wind conditions. The combination of stagnant wind conditions and low inversions produces the greatest pollutant concentrations. On days of no inversion or high wind speeds, ambient air pollutant concentrations are the lowest. During periods of low inversions and low wind speeds, air pollutants generated in developed areas in the Basin are transported predominantly on-shore into Riverside and San Bernardino Counties. The Santa Ana winds, which are strong and dry north or northeasterly winds that occur during the fall and winter months, also disperse air contaminants in the Basin. The Santa Ana conditions tend to last for several days at a time.

Air Quality Background

Air pollutant emissions within the Basin are generated by stationary and mobile sources. Stationary sources can be divided into two major subcategories: point and area sources. Point sources are usually subject to a permit to operate from the SCAQMD, occur at specific identified locations, and are usually associated with manufacturing and industry. Examples of point sources are boilers or combustion equipment that produce electricity or generate heat, such as heating, ventilation, and air conditioning (HVAC) units. In contrast, area sources are widely distributed, produce many small emissions, and they do not require permits to operate from the SCAQMD. Examples of area sources include residential and commercial water heaters, painting operations, portable generators, lawn mowers, agricultural fields, landfills, and consumer products, such as barbeque lighter fluid and hairspray, the area-wide use of which

contributes to regional air pollution. Mobile sources refer to emissions from motor vehicles, including tailpipe and evaporative emissions, and are classified as either on road or off road. On road sources are those that are legally operated on roadways and highways. Off-road sources include aircraft, ships, trains, racecars, and construction vehicles.

Mobile sources account for the majority of the air pollutant emissions within the Basin. However, air pollutants can also be generated by the natural environment, such as when fine dust particles are pulled off the ground surface and suspended in the air during high winds.

Both the federal and state governments have established ambient air quality standards for outdoor concentrations of specific pollutants, referred to as "criteria pollutants," in order to protect public health. The federal and state ambient air quality standards have been set at concentration levels to protect the most sensitive persons from illness or discomfort with a margin of safety. It is the responsibility of the SCAQMD to bring air quality within the Basin into attainment with the federal and state ambient air quality standards, which are identified later in this EIR section.

The criteria pollutants for which federal and state standards have been promulgated, and that are most relevant to air quality planning and regulation in the Basin, are ozone, carbon monoxide, fine suspended particulate matter, nitrogen dioxide, sulfur dioxide, and lead. Toxic air contaminants are also of concern in the Basin. Each of these pollutants is briefly described below.

- **Ozone (O_3)** is a highly reactive and unstable gas that is formed when volatile organic compounds (VOCs) and nitrogen oxides (NO_X), both byproducts of internal combustion engine exhaust, undergo slow photochemical reactions in the presence of sunlight. Ozone concentrations are generally highest during the summer months when direct sunlight, light wind, and warm temperature conditions are favorable to the formation of this pollutant.
- **Carbon Monoxide (CO)** is a colorless, odorless gas produced by the incomplete combustion of carbon-containing fuels, such as gasoline or wood. CO concentrations tend to be the highest during the winter morning, when little to no wind and surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines, unlike ozone, motor vehicles operating at slow speeds are the primary source of CO in the Basin. The highest ambient CO concentrations are generally found near congested transportation corridors and intersections.
- **Respirable Particulate Matter (PM_{10}) and Fine Particulate Matter ($PM_{2.5}$)** consist of extremely small, suspended particles or droplets 10 microns and 2.5 microns or smaller in diameter, respectively. Some sources of particulate matter, like pollen and windstorms, are naturally occurring. However, in populated areas, most particulate matter is caused by road dust, diesel soot, combustion products, abrasion of tires and brakes, and construction activities.
- **Nitrogen dioxide (NO_2)** is a nitrogen oxide compound that is produced by the combustion of fossil fuels, such as in internal combustion engines (both gasoline and diesel powered), as well as point sources, especially power plants. Of the seven types of nitrogen oxide compounds, NO_2 is the most abundant in the atmosphere. As ambient concentrations of NO_2 are related to traffic density, commuters in heavy traffic may be exposed to higher concentrations of NO_2 than those indicated by regional monitors.

- **Sulfur dioxide (SO_2)** is a colorless, extremely irritating gas or liquid. It enters the atmosphere as a pollutant mainly as a result of burning high sulfur-content fuel oils and coal and from chemical processes occurring at chemical plants and refineries. When SO_2 oxidizes in the atmosphere, it forms sulfates (SO_4). Collectively, these pollutants are referred to as sulfur oxides (SO_X).
- **Lead (Pb)** occurs in the atmosphere as particulate matter. The combustion of leaded gasoline is the primary source of airborne Pb in the Basin. The use of leaded gasoline is no longer permitted for on road motor vehicles, so the majority of such combustion emissions are associated with off-road vehicles such as race cars. However, because it was emitted in large amounts from vehicles when leaded gasoline was used for on-road motor vehicles, Pb is present in many soils and can get re-suspended in the air. Other sources of Pb include the manufacturing and recycling of batteries, paint, ink, ceramics, ammunition, and the use of secondary Pb smelters.
- **Toxic Air Contaminants (TAC)** refer to a diverse group of air pollutants that are capable of causing chronic (i.e., of long duration) and acute (i.e., severe but of short duration) adverse effects on human health. They include both organic and inorganic chemical substances that may be emitted from a variety of common sources including gasoline stations, motor vehicles, dry cleaners, industrial operations, painting operations, and research and teaching facilities. TACs are different than "criteria" pollutants in that ambient air quality standards have not been established for them, largely because there are hundreds of air toxics and their effects on health tend to be felt on a local scale rather than on a regional basis.

State standards have been promulgated for other criteria air pollutants, including SO_4, hydrogen sulfide, Pb, and visibility-reducing particles. The state also recognizes vinyl chloride as a TAC, but with an undetermined threshold level of exposure for adverse health effects. Vinyl chloride and hydrogen sulfide emissions are generally generated from mining, milling, refining, smelting, landfills, sewer plants, cement manufacturing, or the manufacturing or decomposition of organic matter. The state standards for sulfate and visibility reducing particles are not exceeded anywhere in the Basin. Lead is typically only emitted during demolition of structures expected to include lead-based paint and materials. However, the developer would be required to follow federal and state regulations that govern the renovation and demolition of structures where materials containing lead are present. Further discussion on the presence and removal of lead-based materials is included in Section 4.6 (Hazards and Hazardous Materials).

Health Effects of Air Pollutants

Ozone

Individuals exercising outdoors, children, and people with preexisting lung disease, such as asthma and chronic pulmonary lung disease, are considered to be the most susceptible sub-groups for ozone effects. Short-term exposure (lasting for a few hours) to ozone 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. Elevated ozone levels are associated with increased school absences. In recent years, a correlation between elevated ambient ozone levels and increases in daily hospital admission rates, as well as mortality, has also been reported. An increased risk for asthma has been found in children who participate in multiple sports and live in high ozone communities.

Ozone exposure under exercising conditions is known to increase the severity of the responses described above. Animal studies suggest that exposure to a combination of pollutants that includes ozone may be more toxic than exposure to ozone alone. Although lung volume and resistance changes observed after a single exposure diminish with repeated exposures, biochemical and cellular changes appear to persist, which can lead to subsequent lung structural changes.

Carbon Monoxide

Individuals with a deficient blood supply to the heart are the most susceptible to the adverse effects of CO exposure. The effects observed include earlier onset of chest pain with exercise, and electrocardiograph changes indicative of worsening oxygen supply to the heart.

Inhaled CO has no direct toxic effect on the lungs, but exerts its effect on tissues by interfering with oxygen transport and competing with oxygen to combine with hemoglobin present in the blood to form carboxyhemoglobin (COHb). Hence, conditions with an increased demand for oxygen supply can be adversely affected by exposure to CO. Individuals most at risk include fetuses, patients with diseases involving heart and blood vessels, and patients with chronic hypoxemia (oxygen deficiency) as seen at high altitudes.

Reduction in birth weight and impaired neurobehavioral development have been observed in animals chronically exposed to CO, resulting in COHb levels similar to those observed in smokers. Recent studies have found increased risks for adverse birth outcomes with exposure to elevated CO levels; these include pre-term births and heart abnormalities.

Particulate Matter

A consistent correlation between elevated ambient fine particulate matter (PM_{10} and $PM_{2.5}$) levels and an increase in mortality rates, respiratory infections, number and severity of asthma attacks and the number of hospital admissions has been observed in different parts of the United States and various areas around the world. In recent years, some studies have reported an association between long-term exposure to air pollution dominated by fine particles and increased mortality, reduction in life span, and an increased mortality from lung cancer.

Daily fluctuations in $PM_{2.5}$ concentration levels have also been related to hospital admissions for acute respiratory conditions in children, to school and kindergarten absences, to a decrease in respiratory lung volumes in normal children, and to increased medication use in children and adults with asthma. Recent studies show lung function growth in children is reduced with long-term exposure to particulate matter.

The elderly, people with pre-existing respiratory or cardiovascular disease, and children appear to be more susceptible to the effects of high levels of PM_{10} and $PM_{2.5}$.

Nitrogen Dioxide

Population-based studies suggest that an increase in acute respiratory illness, including infections and respiratory symptoms in children (not infants), is associated with long-term exposure to NO_2 at levels

found in homes with gas stoves, which are higher than ambient levels found in Southern California. Increase in resistance to air flow and airway contraction is observed after short-term exposure to NO_2 in healthy subjects. Larger decreases in lung functions are observed in individuals with asthma or chronic obstructive pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these sub-groups.

In animals, exposure to levels of NO_2 considerably higher than ambient concentrations results in increased susceptibility to infections, possibly due to the observed changes in cells involved in maintaining immune functions. The severity of lung tissue damage associated with high levels of ozone exposure increases when animals are exposed to a combination of ozone and NO_2.

Sulfur Dioxide

A few minutes of exposure to low levels of SO_2 can result in airway constriction in some asthmatics, all of whom are sensitive to its effects. In asthmatics, increase in resistance to air flow, as well as reduction in breathing capacity leading to severe breathing difficulties, are observed after acute exposure to SO_2. In contrast, healthy individuals do not exhibit similar acute responses even after exposure to higher concentrations of SO_2.

Animal studies suggest that despite SO_2 being a respiratory irritant, it does not cause substantial lung injury at ambient concentrations. However, very high levels of exposure can cause lung edema (fluid accumulation), lung tissue damage, and sloughing off of cells lining the respiratory tract.

Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient SO_2 levels. In these studies, efforts to separate the effects of SO_2 from those of fine particles have not been successful. It is not clear whether the two pollutants act synergistically or one pollutant alone is the predominant factor.

Lead

Fetuses, infants, and children are more sensitive than others to the adverse effects of Pb exposure. Exposure to low levels of Pb can adversely affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotient. In adults, increased Pb levels are associated with increased blood pressure.

Pb poisoning can cause anemia, lethargy, seizures, and death, although it appears that there are no direct effects of Pb on the respiratory system. Pb can be stored in the bone from early age environmental exposure, and elevated blood Pb levels can occur due to breakdown of bone tissue during pregnancy, hyperthyroidism (increased secretion of hormones from the thyroid gland) and osteoporosis (breakdown of bony tissue). Fetuses and breast-fed babies can be exposed to higher levels of Pb because of previous environmental Pb exposure of their mothers.

Odors

The science of odor as a health concern is still new. Merely identifying the hundreds of VOCs that cause odors poses a big challenge. Offensive odors can potentially affect human health in several ways. First, odorant compounds can irritate the eye, nose, and throat, which can reduce respiratory volume. Second, the VOCs that cause odors can stimulate sensory nerves to cause neurochemical changes that might influence health, for instance, by compromising the immune system. Finally, unpleasant odors can trigger memories or attitudes linked to unpleasant odors, causing cognitive and emotional effects such as stress.

Toxic Air Contaminant Emissions

TACs are airborne substances that are capable of causing chronic and acute adverse effects on human health. They include both organic and inorganic chemical substances that may be emitted from a variety of common sources including gasoline stations, motor vehicles, dry cleaners, industrial operations, painting operations, and research and teaching facilities. TACs are different from the "criteria" pollutants previously discussed in that ambient air quality standards have not been established for them.

Health Risk Assessments (HRAs) were performed to estimate the potential health risks associated with TACs generated by operation of the proposed project, and are included as Appendix C (Health Risk Assessments) of this EIR. An HRA is a study used to estimate the increased risk of health problems in people who are exposed to different amounts of toxic substances by combining the results of studies on the health effects of various animal and human exposures to toxic air pollutants with the results of studies that estimate the level of a person's exposure at different distances from the sources of the pollutants. The HRAs for the proposed project provide data on existing health conditions, evaluate potential health risk impacts associated with implementation of the proposed project, and identify feasible mitigation measures for potentially significant impacts. The results of the HRAs are summarized in Impact 4.2-2 of this EIR.

Existing Regional Air Quality

Measurements of ambient concentrations of the criteria pollutants are used by the United States Environmental Protection Agency (USEPA) and the California Air Resources Board (ARB) to assess and classify the air quality of each air basin, county, or, in some cases, a specific developed area. The classification is determined by comparing actual monitoring data with federal and state standards. If a pollutant concentration in an area is lower than the standard, the area is classified as being in "attainment." If the pollutant exceeds the standard, the area is classified as a "non-attainment" area. If there are not enough data available to determine whether the standard is exceeded in an area, the area is designated "unclassified."

The entire Basin is designated as a federal-level extreme non-attainment area for ozone, meaning that the Basin must meet attainment of the 8-hour ozone standard by 2024 and as a non-attainment area for PM_{10} and $PM_{2.5}$. The Basin is a state-level extreme non-attainment area for ozone, and is a state-level non-attainment area for PM_{10} and $PM_{2.5}$. It is in attainment for both the federal and state ambient air quality standards for CO, SO_2, Pb, and NO_2, which is a pure form of NO_X (ARB 2010).

The SCAQMD divides the Basin into thirty-eight source receptor areas (SRAs) in which thirty-two monitoring stations operate to monitor the various concentrations of air pollutants in the region. The City of San Bernardino is located within SRA 34, which covers the Central San Bernardino Valley. The ARB also collects ambient air quality data through a network of air monitoring stations throughout the state. These data are summarized annually and are published in the ARB's California Air Quality Data Summaries. The San Bernardino–4th Street monitoring station is the nearest monitoring station to the project site. This station currently monitors emission levels of ozone, NO_2, CO, PM_{10} and $PM_{2.5}$, but does not monitor the pollutant levels of SO_2. Therefore, SO_2 data are taken from the next closest monitoring station, which is the Fontana-Arrow Highway monitoring station. Data from both stations are used in this analysis.

As not all criteria air pollutants are monitored at a single station, Table 4.2-1 (Summary of Ambient Air Quality in the Proposed Project Vicinity) identifies the federal and state ambient air quality standards for the relevant air pollutants, along with the ambient pollutant concentrations that were measured at the relevant air quality monitoring stations closest to the project site between 2007 to 2009. The ozone, NO_2, CO, PM_{10}, and $PM_{2.5}$ levels were taken from the San Bernardino–4th Street station, while the SO_2 levels were taken from the Fontana-Arrow Highway.

According to the air quality data for San Bernardino–4th Street shown in Table 4.2-1, the state 1-hour ozone standard was exceeded a total of 163 days over the last 3 years. The federal 8-hour ozone standard was exceeded a total of 174 days over the last 3 years, while the state 8-hour ozone standard was exceeded a total of 237 days over the last 3 years. Days exceeding the ozone standards increased between 2007 and 2007. The federal 24-hour PM_{10} standard was not exceeded on any days over the last 2 years, but was exceeded once in 2007. The state 24-hour standard for PM_{10} was exceeded a total of 53 days over the last three years within the region. Days exceeding the standards for particulate matter decreased between 2007 and 2009. The federal 24-hour $PM_{2.5}$ standard was exceeded on 16 days over the last 3 years. No federal or state standards for CO, SO_2, or NO_2 have been exceeded over the last 3 years within SRA 34.

Existing Local Air Quality and Site Emissions

The project site is located within the City of San Bernardino and the project site is currently vacant. Motor vehicles are the primary source of pollutants in the project site vicinity. Traffic-congested roadways and intersections have the potential to generate localized high levels of CO. Localized areas where ambient concentrations exceed federal and/or state standards for CO are termed "CO hotspots." Chapter 5 of the SCAQMD's CEQA Air Quality Handbook identifies CO as a localized problem requiring additional analysis when a project is likely to subject sensitive receptors to CO hotspots. The SCAQMD defines typical sensitive receptors as schools, playgrounds, childcare centers, athletic facilities, hospitals, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. These are all uses that could be occupied by individuals with a low tolerance for air quality pollutants such that negative health impacts could occur. These individuals include, but are not necessarily limited to, children, seniors, the physically ill, and/or those engaging in active physical activity.

Table 4.2-1 Summary of Ambient Air Quality in the Proposed Project Vicinity

Air Pollutants Monitored Within SRA 34—Central San Bernardino Valley Area	*Year*		
	2007	*2008*	*2009*
Ozone (O_3)			
Maximum 1-hour concentration measured	0.153 ppm[a]	0.157 ppm	0.150 ppm
Number of days exceeding state 0.09 ppm 1-hour standard	48	62	53
Maximum 8-hour concentration measured	0.122 ppm	0.122 ppm	0.127 ppm
Number of days exceeding federal 0.075 ppm 8-hour standard	51	62	61
Number of days exceeding state 0.07 ppm 8-hour standard	72	87	78
Nitrogen Dioxide (NO_2)			
Maximum 1-hour concentration measured	0.083 ppm	0.091 ppm	0.084 ppm
Number of days exceeding state 0.18 ppm 1-hour standard	0	0	0
Annual average	0.024 ppm	0.022 ppm	0.020 ppm
Does measured annual average exceed federal 0.053 ppm annual average standard?	No	No	No
Carbon Monoxide (CO)			
Maximum 8-hour concentration measured	2.27 ppm	1.65 ppm	2.20 ppm
Number of days exceeding federal 9.0 ppm 8-hour standard	0	0	0
Number of days exceeding state 9.0 ppm 8-hour standard	0	0	0
Respirable Particulate Matter (PM_{10})			
Maximum 24-hour concentration measured	219 µg/m^3 [b]	76 µg/m^3	66 µg/m^3
Number of days exceeding federal 150 µg/m^3 24-hour standard	1	0	0
Number of days exceeding state 50 µg/m^3 24-hour standard	26	17	10
Fine Particulate Matter ($PM_{2.5}$)			
Maximum 24-hour concentration measured	72.1 µg/m^3	43.5 µg/m^3	37.8 µg/m^3
Number of days exceeding federal 35.0 µg/m^3 24-hour standard	11	3	2
Sulfur Dioxide (SO_2)			
Maximum 24-hour concentration measured	0.004 ppm	0.003 ppm	0.002 ppm
Number of days exceeding federal 0.14 ppm 24-hour standard	0	0	0
Number of days exceeding state 0.04 ppm 24-hour standard	0	0	0

SOURCE: ARB 2010c

a. ppm = parts per million by volume of air

b. µg/m^3 = micrograms per cubic meter

The SCAQMD recommends the use of CALINE4, a dispersion model for predicting CO concentrations, as the preferred method of estimating pollutant concentrations at sensitive receptors near congested roadways and intersections. For each intersection analyzed, CALINE4 adds roadway-specific CO emissions calculated from peak hour turning volumes to ambient CO air concentrations. This

analysis assumes worst-case conditions and provides a screening of maximum, worst-case CO concentrations. For this analysis, localized CO concentrations were calculated based on a simplified CALINE4 screening procedure developed by the Bay Area Air Quality Management District and accepted by the SCAQMD. The simplified model is intended as a screening analysis, which identifies a potential CO hotspot. This methodology assumes worst-case conditions and provides a screening of maximum, worst-case CO concentrations.

Maximum 1-hour and 8-hour CO concentrations were calculated under existing (2007) and future (2030) conditions for twenty-one intersections evaluated in the traffic analysis that are expected to operate with the proposed project on opening day and in year 2030 at Level of Service (LOS) E or F, as shown in Table 4.11-6A and Table 4.11-6B in Section 4.11 (Transportation/Traffic) of this EIR. As all other intersections are expected to operate at a better LOS, those intersections would produce lower CO concentrations. As discussed in Section 4.11, the traffic data from 2010 showed a reduction in traffic volumes compared to the data collected in May 2007. For purposes of the most conservative analysis, the data from 2007 are used as the baseline for an analysis of project impacts.

For existing conditions in Year 2007, the results of the CO calculations are presented in Table 4.2-2 (Existing Localized Carbon Monoxide Concentrations) for representative receptors located in close proximity to each roadway. For purposes of this analysis, receptors are any of the sensitive receptor types identified previously, as well as any location where people would be required (as in a work site) to be located for one to eight hours.

Table 4.2-2 Year 2007 Localized Carbon Monoxide Concentrations

	CO Concentrations in Parts per Million [a, b]					
	25 Feet		*50 Feet*		*100 Feet*	
Intersection	*1-Hour*	*8-Hour*	*1-Hour*	*8-Hour*	*1-Hour*	*8-Hour*
Palm Avenue and Kendall Drive/Little League Drive	5.2	4.2	5.0	4.0	4.7	3.8
Palm Avenue and I-215 Northbound Ramps	5.1	4.1	4.8	3.9	4.6	3.7
Palm Avenue and I-215 Southbound Ramps/Kendall Drive	4.8	3.9	4.7	3.8	4.5	3.6
Palm Avenue and Industrial Parkway	4.4	3.5	4.3	3.5	4.2	3.4
Palm Avenue/Institution Road and Cajon Boulevard	4.3	3.5	4.2	3.4	4.2	3.4

SOURCE: PBS&J 2007 (calculation sheets are provided in Appendix B)

a. National 1-hour standard is 35.0 parts per million. State 1--hour standard is 20.0 parts per million.

b. National 8-hour standard is 9.0 parts per million. State 8-hour standard is 9.0 parts per million.

The federal 1-hour standard is 35.0 parts per million (ppm), and the state 1-hour standard is 20.0 ppm. The 8-hour federal and state standards are 9.0 ppm. As shown in Table 4.2-2, the intersection of Palm Avenue and Kendall Drive/Little League Drive represents the highest existing 1-hour CO concentration at 5.2 ppm at 25 feet and the highest existing 8-hour CO concentration at 4.2 ppm at 25 feet. Both concentrations are below state and federal standards.

4.2.2 Regulatory Framework

Air quality within the Basin is addressed through the efforts of various federal, state, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies responsible for improving the air quality within the Basin are discussed below.

Federal

Clean Air Act

The Clean Air Act (CAA) of 1970 and the CAA Amendments of 1971 required the EPA to establish NAAQS with states retaining the option to adopt more stringent standards or to include other specific pollutants. On April 2, 2007, the Supreme Court found that greenhouse gases, including carbon dioxide, are air pollutants covered by the CAA; however, no NAAQS have been established for greenhouse gases. Impacts related to greenhouse gas emissions are addressed in Section 4.13 (Energy and Greenhouse Gas Emissions).

These standards are the levels of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare. They are designed to protect those "sensitive receptors" most susceptible to further respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

Current NAAQS are listed in Table 4.2-3 (National and California Ambient Air Quality Standards). Areas that meet the ambient air quality standards are classified as "attainment" areas while areas that do not meet these standards are classified as "nonattainment" areas. The classifications for ozone non-attainment include and range in magnitude from marginal, moderate, serious, severe, and extreme. The EPA classifies the Basin as in attainment for carbon monoxide and NO_2. The Basin is in non-attainment for PM_{10} and $PM_{2.5}$ and is in extreme non-attainment for ozone (8-hour). With this designation, the Basin must meet attainment of the 8-hour standard by 2024. Table 4.2-4 (Attainment Status for the South Coast Air Basin) lists the attainment status of the Basin for the criteria pollutants.

The CAA (and its subsequent amendments) requires each state to prepare an air quality control plan referred to as the State Implementation Plan (SIP). The CAA Amendments dictate that states containing areas violating the NAAQS revise their SIPs to include extra control measures to reduce air pollution. The SIP includes strategies and control measures to attain the NAAQS by deadlines established by the CAA. The SIP is periodically modified to reflect the latest emissions inventories, plans, and rules and regulations of air basins as reported by the agencies with jurisdiction over them. The EPA has the responsibility to review all SIPs to determine if they conform to the requirements of the CAA.

Table 4.2-3 National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[a] Concentration	Federal Standards[b] Primary[c,d]	Federal Standards[b] Secondary[c,e]
Ozone (O_3)	1-hour	0.09 ppm (180 µg/m^3)	—	Same as Primary Standards
	8-hour	0.070 ppm (137 µg/m^3)	0.075 ppm (147 µg/m^3)	
Respirable Particulate Matter (PM_{10})	24 Hour	50 µg/m^3	150 µg/m^3	Same as Primary Standards
	Annual Arithmetic Mean	20 µg/m	—	
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	No separate state standard	35 µg/m	Same as Primary Standards
	Annual Arithmetic Mean	12 µg/m	15 µg/m	
Carbon Monoxide (CO)	8-hour	9 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	None
	1-hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as Primary Standard
	1-hour	0.18 ppm (470 mg/m^3)	—	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	—	0.030 ppm (80 µg/m^3)	—
	24 Hour	0.04 ppm (105 µg/m^3)	0.14 ppm (365 µg/m^3)	—
	3 Hour	—	—	0.5 ppm (1,300 µg/m^3)
	1-hour	0.25 ppm (655 µg/m^3)	—	—
Lead[f]	30 Day Average	1.5 µg/m^3	—	—
	Calendar Quarter	—	1.5 µg/m^3	Same as Primary Standard
	Rolling 3-Month Average[g]	—	0.15 µg/m^3	
Visibility-Reducing Particles	8-hour	Extinction coefficient of 0.23 per kilometer—visibility of 10 miles or more due to particles.	No federal standards	
Sulfates	24 Hour	25 µg/m^3	No federal standards	
Hydrogen Sulfide	1-hour	0.03 ppm (42 µg/m^3)	No federal standards	
Vinyl Chloride[f]	24 Hour	0.01 ppm (26 µg/m^3)	No federal standards	

SOURCE: ARB 2010a

a. California standards for ozone, carbon monoxide, SO_2 (1-hour and 24-hour), NO_2, PM_{10}, and visibility reducing particles are values that are not to be exceeded. The standards for sulfates, lead, hydrogen sulfide, and vinyl chloride standards are not to be equaled or exceeded.

b. National standards, other than 1-hour ozone, 8-hour ozone, 24-hour PM_{10}, 24-hour $PM_{2.5}$, and those based on annual averages, are not to be exceeded more than once a year. The 1-hour ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one. The 8-hour ozone standard is attained when the 3-year average of the annual fourth-highest daily maximum 8-hour concentrations is below 0.08 ppm. The 24-hour PM_{10} standard is attained when the 3-year average of the 99th percentile 24-hour concentrations is below 150 µg/m^3. The 24-hour $PM_{2.5}$ standard is attained when the 3-year average of the 98th percentile 24-hour concentrations is below 65 µg/m^3.

c. Concentration expressed first in units in which it was promulgated. Equivalent units given in parenthesis are based on a reference temperature of 25°C and a reference pressure of 760 mm of mercury (1,013.2 millibars). All measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 mm of mercury; parts per million (ppm) in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

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

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

f. The ARB had 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.

g. National lead standard, rolling 3-month average: final rule signed October 15, 2008.

Table 4.2-4 Attainment Status for the South Coast Air Basin

Pollutant	*State Status*	*Federal Status*
Ozone (1-hour)	Extreme Nonattainment	—[a]
Ozone (8-hour)	Extreme Nonattainment	Extreme nonattainment[b]
PM_{10}	Nonattainment	Serious nonattainment[b]
$PM_{2.5}$	Nonattainment	Nonattainment
Carbon Monoxide	Attainment	Attainment/Maintenance
NO_2	Attainment	Attainment/Maintenance
SO_2	Attainment	Attainment
Lead (Pb)	Attainment	Attainment

SOURCE: ARB 2010b

a. The federal 1-hour ozone standard was revoked in 2005 and is no longer in effect for the state of California.

b. Source: EPA 2010. Currently Designated Nonattainment Areas for All Criteria Pollutants. Last updated June 16, 2010. http://www.epa.gov/air/oaqps/greenbk/ancl.html#CALIFORNIA

State

California Clean Air Act

The California Clean Air Act (CCAA) allows states to adopt ambient air quality standards and other regulations provided that they are at least as stringent as federal standards. The ARB, a part of the California EPA (Cal/EPA) is responsible for the coordination and administration of both federal and state air pollution control programs within California, including setting the California ambient air quality standards (CAAQS). The ARB also conducts research, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. The ARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. The ARB also has primary responsibility for the development of California's SIP, for which it works closely with the federal government and the local air districts.

In addition to standards set for the six criteria pollutants, the state has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles (see Table 4.2-3). These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety. Further, in addition to primary and secondary AAQS, the state has established a set of episode criteria for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, and particulate matter. These criteria refer to episode levels representing periods of short-term exposure to air pollutants that actually threaten public health.

The Basin is designated as attainment of the CAAQS for carbon monoxide, NO_2, SO_2, and lead. The Basin is in non-attainment status for PM_{10} and $PM_{2.5}$ and is designated as extreme non-attainment for ozone (1-hour and 8-hour).

Regional

Air Quality Management Plan

The SCAQMD and the Southern California Association of Governments (SCAG) are the agencies responsible for preparing the Air Quality Management Plan (AQMP) for the Basin. Since 1979, a number of AQMPs have been prepared. The 1997 AQMP, updated in 1999 and replaced in 2003, was based on the 1994 and 1991 AQMPs, and was designed to comply with state and federal requirements, reduce the high level of pollutant emissions in the Basin, and ensure clean air for the region through various control measures. To accomplish its task, the 1991 AQMP relied on a multilevel partnership of governmental agencies at the federal, state, regional, and local level. These agencies (i.e., the EPA, the ARB, local governments, SCAG, and SCAQMD) are the cornerstones that implement the AQMP programs.

The 2003 AQMP, adopted in August 2003, updated the attainment demonstration for the federal standards for ozone and PM_{10}; replaced the 1997 attainment demonstration for the federal carbon monoxide standard and provided a basis for a maintenance plan for carbon monoxide for the future; and updated the maintenance plan for the federal NO_2 standard that the Basin has met since 1992.

The most recent comprehensive plan is the 2007 AQMP adopted on July 13, 2007. The 2007 AQMP is designed to meet the state and federal CAA planning requirements and focuses on ozone and $PM_{2.5}$. The 2007 AQMP incorporates significant new emissions inventories, ambient measurements, scientific data, control strategies, and air quality modeling.

South Coast Air Quality Management District Rule 403—Fugitive Dust

During construction, projects within the Basin are subject to SCAQMD Rule 403 (fugitive dust). SCAQMD Rule 403 does not require a permit for construction activities, but sets forth general and specific requirements for all construction sites (as well as other fugitive dust sources) in the Basin. The general requirement prohibits a person from causing or allowing emissions of fugitive dust from construction (or other fugitive dust sources) such that the presence of such dust remains visible in the atmosphere beyond the property line of the emissions source. SCAQMD Rule 403 also prohibits a construction site from causing an incremental PM_{10} concentration impact at the property line of more than 50 micrograms per cubic meter ($\mu g/m^3$) as determined through PM_{10} high-volume sampling, but the concentration standard and associated PM_{10} sampling do not apply if specific measures identified in the rules are implemented and appropriately documented.

In accordance with Rule 403, the SCAQMD requires that contractors implement Best Available Control Technology (BACT) for construction activities. These requirements are identified in Table 4.2-5 (Required Best Available Control Measures for Fugitive Dust [Applicable to All Construction Activity Sources]). Note that these measures are regulatory requirements and as such, do not constitute mitigation under CEQA.

Table 4.2-5 Required Best Available Control Measures for Fugitive Dust (Applicable to All Construction Activity Sources)

Source Category	*Control Measures*[a]	*Guidance*[b]
Backfilling	Stabilize backfill material when not actively handling; stabilize backfill material during handling; and stabilize soil at completion of activity.	Mix backfill soil with water prior to moving; dedicate water truck or high capacity hose to backfilling equipment; empty loader bucket slowly so that no dust plumes are generated; and minimize drop height from loader bucket.
Clearing and grubbing	Maintain stability of soil through pre-watering of site prior to clearing and grubbing; stabilize soil during clearing and grubbing activities; and stabilize soil immediately after clearing and grubbing activities.	Maintain live perennial vegetation where possible and apply water in sufficient quantity to prevent generation of dust plumes.
Clearing forms	Use water spray to clear forms; use sweeping and water spray to clear forms; or, use vacuum system to clear forms.	Use of high pressure air to clear forms may cause exceedance of rule requirements.
Crushing	Stabilize surface soils prior to operation of support equipment; and stabilize material after crushing.	Follow permit conditions for crushing equipment; pre-water material prior to loading into crusher; monitor crusher emissions opacity; and apply water to crushed material to prevent dust plumes.
Cut and fill	Pre-water soils prior to cut and fill activities; and stabilize soil during and after cut and fill activities.	For large sites, pre-water with sprinklers or water trucks and allow time for penetration; and use water trucks/pulls to water soils to depth of cut prior to subsequent cuts.
Demolition – mechanical/ manual	Stabilize wind erodible surfaces to reduce dust; stabilize surface soil where support equipment and vehicles will operate; stabilize loose soil and demolition debris; and comply with AQMD Rule 1403.	Apply water in sufficient quantities to prevent the generation of visible dust plumes.
Disturbed soil	Stabilize disturbed soil throughout the construction site; and stabilize disturbed soil between structures	Limit vehicular traffic and disturbances on soils where possible; if interior block walls are planned, install as early as possible; and apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes.
Earth-moving activities	Pre-apply water to depth of proposed cuts; re-apply water as necessary to maintain soils in a damp condition and to ensure that visible emissions do not exceed 100 feet in any direction; and stabilize soils once earth-moving activities are complete.	Grade each project phase separately, timed to coincide with construction phase; upwind fencing can prevent material movement on site; and apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes.
Importing/ exporting of bulk materials	Stabilize material while loading to reduce fugitive dust emissions; maintain at least six inches of freeboard on haul vehicles; stabilize material while transporting to reduce fugitive dust emissions; stabilize material while unloading to reduce fugitive dust; and comply with Vehicle Code Section 23114.	Use tarps or other suitable enclosures on haul trucks; check belly-dump truck seals regularly and remove any trapped rocks to prevent spillage; comply with track-out prevention/mitigation requirements; and provide water while loading and unloading to reduce visible dust plumes.
Landscaping	Stabilize soils, materials, slopes	Apply water to materials to stabilize; maintain materials in a crusted condition; maintain effective cover over materials; stabilize sloping surfaces using soil binders until vegetation or ground cover can effectively stabilize the slopes; and hydro seed prior to rain season.

Table 4.2-5 Required Best Available Control Measures for Fugitive Dust (Applicable to All Construction Activity Sources)

Source Category	*Control Measures*[a]	*Guidance*[b]
Road shoulder maintenance	Apply water to unpaved shoulders prior to clearing; and apply chemical dust suppressants and/or washed gravel to maintain a stabilized surface after completing road shoulder maintenance.	Installation of curbing and/or paving of road shoulders can reduce recurring maintenance costs; and use of chemical dust suppressants can inhibit vegetation growth and reduce future road shoulder maintenance costs.
Screening	Pre-water material prior to screening; limit fugitive dust emissions to opacity and plume length standards; and stabilize material immediately after screening.	Dedicate water truck or high capacity hose to screening operation; drop material through the screen slowly and minimize drop height; and install wind barrier with a porosity of no more than 50 percent upwind of screen to the height of the drop point.
Staging areas	Stabilize staging areas during use; and stabilize staging area soils at project completion.	Limit size of staging area; limit vehicle speeds to 15 miles per hour; and limit number and size of staging area entrances/exits.
Stockpiles/bulk material handling	Stabilize stockpiled materials, and stockpiles within 100 yards of off-site occupied buildings must not be greater than eight feet in height or must have a road bladed to the top to allow water truck access or must have an operational water irrigation system that is capable of complete stockpile coverage.	Add or remove material from the downwind portion of the storage pile; and maintain storage piles to avoid steep sides or faces.
Traffic areas for construction activities	Stabilize all off-road traffic and parking areas; stabilize all haul routes; and direct construction traffic over established haul routes.	Apply gravel/paving to all haul routes as soon as possible to all future roadway areas; and barriers can be used to ensure vehicles are used only on established parking areas/haul routes.
Trenching	Stabilize surface soils where trencher or excavator and support equipment will operate; and stabilize soils at the completion of trenching activities.	Pre-watering of soils prior to trenching is an effective preventive measure. For deep trenching activities, pre-trench to 18 inches, soak soils via the pre-trench, and resume trenching; and washing mud and soils from equipment at the conclusion of trenching activities can prevent crusting and drying of soil on equipment.
Truck loading	Pre-water material prior to loading; and ensure that freeboard exceeds six inches (CVC 23114)	Empty loader bucket such that no visible dust plumes are created; and ensure that the loader bucket is close to the truck to minimize drop height while loading.
Turf overseeding	Apply sufficient water immediately prior to conducting turf vacuuming activities to meet opacity and plume length standards; and cover haul vehicles prior to exiting the site.	Haul waste material immediately off site.
Unpaved roads/parking lots	Stabilize soils to meet the applicable performance standards; and limit vehicular travel to established unpaved roads (haul routes) and unpaved parking lots.	Restricting vehicular access to established unpaved travel paths and parking lots can reduce stabilization requirements.
Vacant land	In instances where vacant lots are 0.10 acre or larger and have a cumulative area of 500 square feet or more that are driven over and/or used by motor vehicles and/or off-road vehicles, prevent motor vehicle and/or off-road vehicle trespassing, parking, and/or access by installing barriers, curbs, fences, gates, posts, signs, shrubs, trees, or other effective control measures.	Restricting access to vacant site prevents disturbance of soils.

Table 4.2-5 Required Best Available Control Measures for Fugitive Dust (Applicable to All Construction Activity Sources)		
Source Category	*Control Measures[a]*	*Guidance[b]*

SOURCE: SCAQMD 2004

a. Control Measures are required actions.

b. Guidance are suggestions on how to accomplish the control measures.

The conditions included in Table 4.2-5 apply to construction activities conducted during normal wind conditions (i.e., with wind gusts less than 25 miles per hour). Additional contingency measures, included in Table 4.2-6 (Contingency Control Measures for Fugitive Dust During High Winds), are applied to those periods when instantaneous wind gusts meet or exceed 25 miles per hour.

Table 4.2-6 Contingency Control Measures for Fugitive Dust During High Winds

Fugitive Dust Source Category	*Control Measures*
Earth-moving	Cease all active operations; or apply water to soil not more than 15 minutes prior to moving such soil.
Disturbed surface areas	On the last day of active operations prior to a weekend, holiday, or any other period when active operations will not occur for not more than four consecutive days: apply water with a mixture of chemical stabilizer diluted to not less than 1/20 of the concentration required to maintain a stabilized surface for a period of six months; apply chemical stabilizers prior to wind event; apply water to all unstabilized disturbed areas three times per day. If there is any evidence of wind driven fugitive dust, watering frequency is increased to a minimum of four times per day; establish a vegetative ground cover within 21 days after active operations have ceased. Ground cover must be of sufficient density to expose less than 30 percent of unstabilized ground within 90 days of planting, and at all times thereafter; or utilize any combination of these control actions such that, in total, these actions apply to all disturbed surface areas.
Unpaved roads	Apply chemical stabilizers prior to wind event; apply water twice per hour during active operation; or stop all vehicular traffic.
Open storage piles	Apply water twice per hour; or install temporary coverings.
Paved road track-out	Cover all haul vehicles; or comply with the vehicle freeboard requirements of Section 23114 of the California Vehicle Code for both public and private roads.
All categories	Any other control measures approved by the Executive Officer and the EPA as equivalent to the methods specified in this table may be used.

SOURCE: SCAQMD 2004

High winds are those exceeding 25 miles per hour.

Local

City of San Bernardino General Plan

Local jurisdictions, such as the City of San Bernardino, have the authority and responsibility to reduce air pollution through their police power and decision-making authority. Specifically, the City is responsible for the assessment and mitigation, as necessary, of air emissions resulting from its land use decisions. The City of San Bernardino is also responsible for the implementation of transportation control measures within their jurisdiction as outlined in the 2007 AQMP. Examples of such measures include bus turnouts,

energy-efficient streetlights, and synchronized traffic signals. In accordance with CEQA requirements and the CEQA review process, the City assesses the air quality impacts of new development projects, mitigates potentially significant air quality impacts by conditional discretionary permits, and monitors and enforces implementation of such mitigation.

The Natural Resources and Conservation Element of the General Plan identifies potential sources of emissions in the City and provides goals and policies adapted from the Model Air Quality Element for San Bernardino County that ensure that emissions from various sources would not create an unacceptable air quality environment. Relevant policies from the City of San Bernardino General Plan that pertain to air quality are included in the Natural Resources and Conservation Element.

Goal 12.5 Promote air quality that is compatible with the health, well being and enjoyment of life.

Policy 12.5.3 Require dust abatement measures during grading and construction operations.

Consistency Analysis

The proposed project's construction activities would include grading and excavation, structural and building construction, paving, and finishing and cleanup. Appropriate dust control measures would be implemented during each phase of development, as required by SCAQMD Rule 403—Fugitive Dust. PR4.2B shall be implemented, as required by applicable local, state, or federal laws or regulations as to be consistent with Goal 12.5.

4.2.3 Project Impacts and Mitigation Measures

Analytic Method

The analysis in this section focuses on the nature and magnitude of the change in the air quality environment due to implementation of the proposed project. Air pollutant emissions associated with the proposed project would result from operation of the proposed development and from project-related traffic volumes. Construction activities would also generate emissions at the project site and on roadways resulting from construction-related traffic. The net increase in project site emissions generated by these activities and other secondary sources have been quantitatively estimated and compared to thresholds of significance established by the SCAQMD.

Construction Emissions

Construction emissions are calculated using the URBEMIS 2007 computer model developed for the ARB by estimating the types and number of pieces of equipment that would be used to grade and excavate the project site, construct the proposed development, and plant new landscaping within the project site. Construction emissions are analyzed according to the thresholds established by the SCAQMD and published in the SCAQMD CEQA Air Quality Handbook. The construction activities associated with the proposed project would create diesel emissions, and would generate emissions of

dust. All construction activity estimates were based on information estimated by the applicant. Construction equipment within the project site that would generate criteria air pollutants could include excavators, export trucks, and loaders. Some of this equipment would be used during grading activities as well as when structures are constructed on the project site. In addition, emissions during construction and grading activities include truck trips off site to remove excavated soil from the project site. It is assumed that grading would involve the export of approximately 200,000 cubic yards of soil. It is further assumed that most of the construction equipment used would be diesel-powered.

Operational Emissions

Operational emissions associated with the proposed project are estimated using the URBEMIS 2007 computer model developed for the ARB and recommended by the SCAQMD, the information provided in Chapter 3 (Project Description), and trip generation rates from the project traffic study, included in its entirety as Appendix L2 of this EIR. Operational emissions would be comprised of mobile source emissions and area source emissions. Mobile source emissions are generated by the increase in motor vehicle trips to and from the project site associated with operation of the proposed project, including increased truck trips involved with operation of the distribution center. Area source emissions are generated by natural gas consumption for space and water heating, and landscape maintenance equipment. To determine if an air quality impact would occur, the increase in emissions was compared with the SCAQMD's recommended thresholds.

Localized Pollutant Concentrations for Construction

Localized Significance Thresholds (LSTs) were developed in response to the SCAQMD Governing Board's Environmental Justice Enhancement Initiative (I-4). The LST methodology was provisionally adopted by the SCAQMD Governing Board in October 2003 and formally approved by SCAQMD's Mobile Source Committee in February 2005. LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard, and are developed based on the ambient concentrations of that pollutant for each source receptor area and distance to the nearest sensitive receptor.

LSTs, which are voluntary, only apply to CO, NO_2, PM_{10}, and $PM_{2.5}$ emissions during construction at the discretion of the lead agency. Screening-level analysis of LSTs is only recommended for project sites that are 5 acres or less. The SCAQMD recommends that any project over 5 acres should perform air quality dispersion modeling to assess impacts to nearby sensitive receptors. As the total size of the project site is approximately 38.4 acres, dispersion modeling was performed for CO, NO_X, PM_{10}, and $PM_{2.5}$ emissions during construction of the proposed project using the AERMOD dispersion model. NO_X to NO_2 conversion was accounted for during the modeling to determine the maximum NO_2 concentrations at the nearest sensitive receptors. Dispersion modeling can be done on a voluntary basis by public agencies to determine whether or not a project may generate significant adverse localized air quality impacts. LSTs have been established by the SCAQMD only for construction of projects and do not apply to emissions during operation as localized concentration cannot be properly quantified during operation due to the variable locations of mobile sources, which make up the largest source of criteria air pollutants during

operation of the proposed project. Only CO concentrations at roadway intersection with an adverse LOS may be quantified, and the methodology for this is described below.

Localized CO Concentrations for Operation

The SCAQMD recommends that ambient air quality effects of traffic emissions be evaluated using the CALINE4 dispersion model and traffic volumes provided in the project traffic study, which is included in its entirety as Appendix L2 of this EIR. CALINE4 is a Gaussian dispersion model specifically designed to evaluate air quality impacts of roadway projects. Each roadway link analyzed in the model is treated as a sequence of short segments. Each segment of a roadway link is treated as a separate emission source producing a plume of pollutants which disperses downwind. Pollutant concentrations at any specific location are calculated using the total contribution from overlapping pollution plumes originating from the sequence of roadway segments. For this analysis, CO concentrations from five roadway intersections determined to operate at LOS D, E, or F on opening day or in year 2030 were analyzed using a simplified CALINE4 screening procedure developed by the Bay Area Air Quality Management District and accepted by the SCAQMD. The simplified model is intended as a screening analysis, which identifies a potential CO hotspot. This methodology assumes worst-case conditions and provides a screening of maximum, worst-case CO concentrations. All other roadway intersections are expected to operate at LOS C or better, and would therefore generate lower CO concentrations.

Toxic Air Contaminants

Due to the number of potential TACs, their diverse nature, and the lack of specific emissions standards for these pollutants, potential impacts associated with these contaminants are based upon the operational HRAs performed for the proposed project for diesel particulate matter (DPM), which are provided as Appendix C of this document. The procedures used in the HRAs follow the guidelines in the Office of Environmental Health Hazards (OEHHA) *Air Toxics Hot Spots Program Risk Assessment Guidelines, Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* (August 2003). The focus of this study is the particulate matter emitted in the exhaust of diesel-fired construction equipment (specifically, heavy-duty trucks). OEHHA has developed a diesel particulate inhalation non-cancer chronic (long-term) reference exposure level (REL) of 5 micrograms per cubic meter ($\mu g/m^3$). No non-cancer acute (short-term) REL has been established for diesel particulate; hence, short-term impacts from DPM for exposures less than seventy years are not examined in the HRAs. Additionally, although a cancer risk factor has been established for DPM, the OEHHA HRA cancer risk factors assume a continuous exposure over a 70-year time frame. It is, therefore, not meaningful to evaluate long-term cancer impacts from construction activities that last only twenty-four months. SCAQMD staff does not normally require the evaluation of cancer risk for construction activities for this reason. Accordingly, the potential cancer risk for construction is not addressed in the HRAs.

Thresholds of Significance

The following thresholds of significance are based on Appendix G of the 2011 CEQA Guidelines and City-specific thresholds, where applicable. For the purposes of this EIR, implementation of the proposed project may result in a potentially significant impact if the proposed project would:

- Conflict with or obstruct implementation of the applicable air quality plan
- 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 proposed project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors, including VOCs and NO_X)
- Expose sensitive receptors to substantial pollutant concentrations
- Create objectionable odors affecting a substantial number of people

As the agency principally responsible for comprehensive air pollution control in the Basin, the SCAQMD recommends that projects should be evaluated in terms of air pollution control thresholds established by the SCAQMD and published in the CEQA Air Quality Handbook. These thresholds were developed by the SCAQMD to provide quantifiable levels so that projects can be compared with the same standard. The City utilizes the SCAQMD's thresholds that are recommended at the time that development projects are proposed to assess the significance of quantifiable impacts. The following quantifiable thresholds are currently recommended by the SCAQMD and are used to determine the significance of air quality impacts associated with the proposed project.

Construction Emissions Thresholds

The SCAQMD recommends that projects with construction-related emissions that exceed any of the following emissions thresholds should be considered to have significant impacts:

- 550 pounds per day of CO
- 75 pounds per day of VOC
- 100 pounds per day of NO_X
- 150 pounds per day of SO_X
- 150 pounds per day of PM_{10}
- 55 pounds per day of $PM_{2.5}$

Operational Emissions Thresholds

The SCAQMD recommends that projects with operational emissions that exceed any of the following emissions thresholds should be considered significant; these thresholds apply to individual development projects only; they do not apply to cumulative development:

- 550 pounds per day of CO
- 55 pounds per day of VOC
- 55 pounds per day of NO_X
- 150 pounds per day of SO_X
- 150 pounds per day of PM_{10}
- 55 pounds per day of $PM_{2.5}$

In order to assess cumulative impacts, the SCAQMD recommends that projects be evaluated to determine whether they would be consistent with 2007 AQMP performance standards and project specific emissions thresholds. In the case of the proposed project, air pollutant emissions would be considered to be cumulatively considerable if the new sources of emissions exceed SCAQMD emissions thresholds, or would conflict with the 2007 AQMP.

The SCAQMD also recommends that projects that could emit carcinogens or TACs that exceed the maximum, incremental, individual cancer risk of 10-in-1 million be considered to have a significant impact.

Localized Significance Thresholds

As described previously, LSTs were developed in response to the SCAQMD Governing Board's Environmental Justice Enhancement Initiative (I-4). LSTs are only applicable for construction emissions of CO, NO_X, PM_{10}, and $PM_{2.5}$. LSTs do not apply to emissions during operation of the proposed project. Thresholds of significance for localized concentrations were developed by comparing the highest ambient air quality measurements between 2006 and 2008 (as shown in Table 4.2-1 [Summary of Ambient Air Quality in the Proposed Project Vicinity]) to the most stringent air quality standards (as shown in Table 4.2-3 [National and California Ambient Air Quality Standards]). The difference is the maximum concentration of criteria air pollutants that the proposed project would be able to create without causing an exceedance in the ambient air quality standard. Therefore, the following LSTs apply to construction of the proposed project:

- 17 ppm for 1-hour CO concentrations
- 7 ppm for 8-hour CO concentrations
- 0.08 ppm for 1-hour NO_2 concentrations

As the Basin is in serious non-attainment for PM_{10}, the SCAQMD has established the following LSTs for PM_{10} and $PM_{2.5}$ concentrations during construction:

- 10.4 $\mu g/m^3$ for 24-hour PM_{10} concentrations
- 10.4 $\mu g/m^3$ for 24-hour $PM_{2.5}$ concentrations

Less-Than-Significant Impacts

Threshold	Would the project conflict with or obstruct implementation of the applicable air quality plan?

Impact 4.2-1 **Development of the proposed project would not conflict with or obstruct implementation of the applicable air quality plan. This is considered a *less-than-significant* impact.**

The AQMP incorporates land use assumptions from local general plans and regional growth projections developed by SCAG to estimate stationary and mobile air emissions associated with projected population and planned land uses. If the proposed land use is consistent with the local general plan, then the added emissions generated by the new project are consistent with the baseline emissions forecasts used in the

AQMP, and the project is considered to be consistent with AQMP. The land use and transportation control sections of the 2007 AQMP are based on the SCAG regional growth forecasts, which have incorporated projections from local general plans.

The City's General Plan is part of the growth forecasts considered in the 2007 AQMP. As discussed in Chapter 3, the proposed project is within the Industrial Light land use category as established in the City's General Plan. The project site and a large contiguous area to the south, east, and west are currently zoned Industrial. As such, the proposed project would be consistent with the General Plan land use designation for the project site. The proposed project would, therefore, result in growth anticipated in and consistent with the City's General Plan. As growth forecasts in the City's General Plan are used to develop the SCAG regional growth forecasts, which are used to develop baseline emissions forecasts in the AQMP, the proposed project would be consistent with the growth and emissions forecasts of the 2007 AQMP. Therefore, this impact would be ***less than significant***.

Threshold	Would the project expose sensitive receptors to substantial toxic air emissions?

Impact 4.2-2 **Development of the proposed project would not expose sensitive receptors to substantial pollutant concentrations due to project-generated toxic air emissions. This is considered a *less-than-significant* impact.**

Some land uses are more sensitive to air pollution due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardio-respiratory diseases.

Residential areas are also sensitive to air pollution due to residents (including children and the elderly) remaining at home for extended periods of time, which results in sustained exposure to air pollutants. The closest sensitive receptors to the project site are the residences located to the north of the project site, on the opposite side of the I-215 freeway. The closest school, Palm Elementary, is 1,423 meters north/northwest of the center of the Project site, and Crestview Baptist Church is located approximately 636 meters north.

The HRAs for the proposed project are included as Appendix C of this EIR and include detailed descriptions of the calculation methodology used. In order to evaluate the potential cancer risks posed by DPM resulting from the operation of the proposed project, HRAs were prepared for the proposed project. As previously stated, the primary cancer-causing TAC emission sources at the proposed project are diesel transport trucks. DPM in the exhaust from delivery trucks serving the warehouse facility were calculated using the California Air Resources Board's model EMFAC2007 Version 2.3 for On-Road Heavy-Heavy-Duty Diesel Trucks, for the South Coast Air Basin for the year 2013. The AERMOD dispersion model was then used to estimate concentrations of DPM resulting from the operational activities associated with the proposed project. For the calculation of the cancer risk at residential and sensitive receptors, the duration of exposure to project emissions was assumed to be 24 hours per day, 365 days per year, for 70 years. For the worker receptors, the duration of exposure was assumed to be 24 hours per day, 365 days per year, for 40 years, although the HRA results for these receptors are still expressed in terms of the incremental cancer risk over a 70-year period. To obtain the chronic non-

cancer hazard index, the annual DPM concentration is divided by the OEHHA DPM chronic REL of 5.0 $\mu g/m^3$. The thresholds or significance determined by SCAQMD for cancer risk is 10 in 1 million and the chronic hazard index due to a new project is 1.

As stated in the HRAs, the maximum cancer risk predicted at a residence near the project site was 1.27 in 1 million, located north of Kendall Drive between Palm Avenue and Olive Avenue, while the maximum cancer risk predicted at the Crestview Baptist Church and Palm Elementary School were 0.08 and 0.01 in 1 million, respectively. In addition, the maximum cancer risk predicted for on- and off-site worker receptors near the project site was 3.78 in 1 million, located along the fenceline between the project site and the Denny's Restaurant to the west. Since the diesel particulate cancer risk was predicted to be less than 10 in 1 million at all receptors, the estimated cancer risk is below the threshold of significance determined by the SCAQMD. Also, at the point of maximum impact, the AERMOD model predicts the chronic non-cancer hazard index for DPM associated with the proposed project to be 0.00487, which is substantially lower than the 1.0 threshold of significance used by SCAQMD. The point of maximum impact (PMI) is the worker exposure at fenceline between the project site and the Denny's Restaurant. Since the DPM chronic hazard index is less than 1.0 at the PMI, the chronic hazard index would be less than 1.0 at all receptors including residents. As the proposed project would not result in exposure of receptors above the thresholds of significance established by SCAQMD for cancer risk and chronic non-cancer health risks, this impact would be ***less than significant***. No mitigation is required.

Impact 4.2-3 Operation of the proposed project would generate increased local traffic volumes, but would not expose sensitive receptors to substantial localized CO concentrations. This is considered a *less-than-significant* impact.

Vehicular exhaust may impact air quality immediately adjacent to the roadways. Such impacts occur during periods of maximum traffic congestion and during minimum atmospheric dispersion.

Operation of a project may contribute to increased vehicle traffic in its vicinity, which may contribute to off-site air quality impacts. Areas of vehicle congestion have the potential to create "pockets" of CO called "hotspots." Hotspots are usually created in locations where vehicles are subject to traffic congestion, reduced speeds, and queuing. These are typically conditions found at busy intersections, but can also occur along congested major arterials and freeways. CO hot spots occur mostly in the early morning hours when winds are stagnant and ambient CO concentrations are elevated. These pockets have the potential to exceed the state 1-hour standard of 20 ppm and/or the 8-hour standard of 9.0 ppm, thus affecting sensitive receptors in the immediate vicinity that are close to major roadways.

For this analysis, CO concentrations from 21 roadway intersections determined to operate at LOS D, E, or F on opening day or in year 2030 were analyzed using a simplified CALINE4 screening procedure developed by the Bay Area Air Quality Management District and accepted by the SCAQMD. The simplified model is intended as a screening analysis, which identifies a potential CO hotspot. This methodology assumes worst-case conditions and provides a screening of maximum, worst-case CO concentrations. All other roadway intersections are expected to operate at LOS C or better, and would therefore generate lower CO concentrations. Typically, hotspots analyses are not performed for unsignalized intersections, which have lower traffic volumes than those with signals. This is particularly

the case when a hotspots analysis shows no impacts for the most congested, signalized intersections. The results of this hotspot analysis are shown in Table 4.2-7 (Projected Localized Carbon Monoxide Concentrations for Year 2010) and Table 4.2-8 (Projected Localized Carbon Monoxide Concentrations for Year 2030).

As shown in Table 4.2-7, the results of CO modeling indicate that traffic generated by the proposed project and cumulative projects in the vicinity would not contribute to 1-hour or 8-hour CO concentrations that exceed the CAAQS or NAAQS at the most-congested nearby intersections in the near term at Opening Day. In addition, as shown in Table 4.2-8, the results of CO modeling indicate that traffic generated by the proposed project and cumulative projects in the vicinity would not contribute to 1-hour or 8-hour CO concentrations that exceed the CAAQS or NAAQS at the most-congested nearby intersections at the future build-out year of 2030. Therefore, sensitive receptors would not be exposed to substantial pollutant concentrations due to the operation of the proposed project and the impact would be ***less than significant***.

Table 4.2-7 Projected Localized Carbon Monoxide Concentrations for Year 2010

	CO Concentrations in Parts per Million [a, b]					
	25 Feet		*50 Feet*		*100 Feet*	
Intersection	*1-Hour*	*8-Hour*	*1-Hour*	*8-Hour*	*1-Hour*	*8-Hour*
Palm Avenue and Kendall Drive/Little League Drive	4.9	4.0	4.7	3.8	4.5	3.7
Palm Avenue and I-215 Northbound Ramps	5.2	4.2	5.0	4.0	4.7	3.8
Palm Avenue and I-215 Southbound Ramps/Kendall Drive	4.8	3.9	4.7	3.8	4.5	3.6
Palm Avenue and Industrial Parkway	4.3	3.5	4.3	3.5	4.2	3.4
Palm Avenue/Institution Road and Cajon Boulevard	4.2	3.4	4.2	3.4	4.1	3.4

SOURCE: PBS&J 2007 (calculation sheets are provided in Appendix B)

a. National 1-hour standard is 35.0 parts per million. State 1-hour standard is 20.0 parts per million.

b. National 8-hour standard is 9.0 parts per million. State 8-hour standard is 9.0 parts per million.

Table 4.2-8 Project Localized Carbon Monoxide Concentrations for Year 2030

	CO Concentrations in Parts per Million [a, b]					
	25 Feet		*50 Feet*		*100 Feet*	
Intersection	*1-Hour*	*8-Hour*	*1-Hour*	*8-Hour*	*1-Hour*	*8-Hour*
Palm Avenue and Kendall Drive/Little League Drive	4.2	3.4	4.2	3.4	4.1	3.4
Palm Avenue and I-215 Northbound Ramps	4.3	3.5	4.2	3.4	4.2	3.4
Palm Avenue and I-215 Southbound Ramps/Kendall Drive	4.3	3.5	4.2	3.4	4.2	3.4
Palm Avenue and Industrial Parkway	4.2	3.4	4.1	3.4	4.1	3.3
Palm Avenue/Institution Road and Cajon Boulevard	4.1	3.3	4.1	3.3	4.1	3.3

SOURCE: PBS&J 2007 (calculation sheets are provided in Appendix B)

a. National 1-hour standard is 35.0 parts per million. State 1-hour standard is 20.0 parts per million.

b. National 8-hour standard is 9.0 parts per million. State 8-hour standard is 9.0 parts per million.

Threshold	Would the project create objectionable odors affecting a substantial number of people?

Impact 4.2-4 **Development of the proposed project would not create objectionable odors affecting a substantial number of people. Compliance with the identified project requirement PR4.2A would ensure that this impact would remain *less than significant*.**

Objectionable odors are a localized phenomenon and are confined to the vicinity of the emitter of the odor. Construction activities do not usually emit offensive odors. Although construction activities occurring in association with the proposed project could generate airborne odors associated with the operation of construction vehicles (i.e., diesel exhaust) and the application of interior and exterior architectural coatings, these emissions would only occur during daytime hours, would generally be restricted to the immediate vicinity of the construction site and activity, and would not affect a substantial number of people.

The CARB's Air Quality and Land Use Handbook includes a list of the most common sources of odor complaints received by local air districts. Offensive odors from operation are usually associated with land uses that include agriculture, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. The proposed project is an industrial warehouse and distribution center and is not a use typically associated with the production of objectionable odors. The other potential source of odors would be new trash receptacles within the project site. Incorporation of project requirement PR4.2A into the proposed project would ensure that trash associated with the proposed project would be collected with sufficient regularity to prevent substantial objectionable odors, thereby ensuring that this impact would remain ***less than significant***.

The following project requirement shall be implemented, as required by federal, state, or local statute or code:

PR4.2A *Trash receptacles within the project area will be required to have lids that enable convenient collection and loading and will be emptied on a regular basis, in compliance with City of San Bernardino regulations for the collection of solid waste.*

Threshold	Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Impact 4.2-5 **Construction of the proposed project would not violate an air quality standard or contribute substantially to an existing or projected air quality violation. Compliance with the identified project requirements PR4.2B through PR4.2D would ensure this impact would remain *less than significant*.**

The proposed project would generate short-term emissions from construction activities. The SCAQMD recommended thresholds of significance for these new emissions were developed for individual

development projects and are based on the SCAQMD's New Source Review emissions standards for individual sources of new emissions. They do not apply to cumulative development or multiple projects.

Estimated air emissions from the project's construction activities were calculated using the URBEMIS 2007 emissions model approved by ARB. URBEMIS is a planning tool for estimating air emissions related to land use projects. The model incorporates mobile source emissions from the EMFAC 2007 computer model as well as the Institute of Transportation Engineers (ITE) trip generation rates for vehicle emission projections.

The proposed project would generate short-term air quality impacts due to construction activities. Construction emissions can be distinguished as either on site or off site. On-site air pollutant emissions would consist primarily of exhaust emissions from off-road heavy-duty diesel and gasoline powered construction equipment, as well as fugitive particulate matter from earthwork and material handling operations. Off-site emissions would result from workers commuting to and from the job site and the hauling of excess dirt for disposal.

The proposed project construction activities would include grading and excavation, structural and building construction, paving, and finishing and cleanup. Construction of the proposed project would take approximately 22 months to complete.

On-site and off-site emissions of criteria pollutants from construction activities were estimated using the construction module of URBEMIS 2007. Equipment exhaust emissions were determined using the URBEMIS 2007 default values for horsepower and load factors. URBEMIS 2007 default equipment assumptions were also used. Estimated maximum emissions from the proposed project construction are shown in Table 4.2-9 (Estimated Peak Daily Construction Emissions in Pounds per Day) and are compared with the SCAQMD's thresholds of significance. Detailed modeling output files and calculation worksheets are provided in Appendix B. These calculations assume that construction activities would begin in the third or fourth quarter of 2011 and would last for a total of 22 months. In addition, these calculations assume a maximum of 8.3 acres would be disturbed per day during site grading, that appropriate dust control measures would be implemented during each phase of development, as required by SCAQMD Rule 403—Fugitive Dust. The calculations also assume that only low-VOC architectural coatings would be used for project construction. Additionally, it was assumed that the proposed project would generate only 20 percent of the VOC emissions projected for the project by URBEMIS. This assumption is based on the fact that the URBEMIS model assumes that a warehouse facility would be coated similarly to a commercial facility. URBEMIS assumes the facility would require its entire interior to be painted or coated, as well as outdoor paint and coatings for other additional amenities such as interior walls, cabinets, and counters, based on the square footage of the building. Only a portion of the interior and exterior of the proposed project would require paint. The facility would not feature interior walls and would include only minimal amenities that would require coatings.

The following project requirements shall be implemented, as required by federal, state, or local statute or code, and are included in the construction emissions calculations:

PR4.2B *As required by South Coast Air Quality Management District Rule 403—Fugitive Dust, all construction activities that are capable of generating fugitive dust are required to implement dust control measures during each phase of project development to reduce the amount of particulate matter entrained in the ambient air. These measures include the following:*

- *Limiting the amount of area disturbed during site grading to 10 acres per day or less*
- *Application of soil stabilizers to inactive construction areas*
- *Quick replacement of ground cover in disturbed areas*
- *Watering of exposed surfaces three times daily*
- *Watering of all unpaved haul roads three times daily*
- *Covering all stock piles with tarp*
- *Reduction of vehicle speed on unpaved roads*
- *Post signs on site, limiting traffic on unpaved roads to 15 miles per hour or less*
- *Sweep streets adjacent to the project site at the end of the day if visible soil material is carried over to adjacent roads*
- *Cover or have water applied to the exposed surface of all trucks hauling dirt, sand, soil, or other loose materials prior to leaving the site to prevent dust from impacting the surrounding areas*
- *Install wheel washers where vehicles enter and exit unpaved roads onto paved roads to wash off trucks and any equipment leaving the site each trip*

PR4.2C *The developer shall require by contract specifications that all diesel-powered equipment used be retrofitted with after-treatment products, including diesel oxidation catalysts (that reduce NO_X emissions by at least 40 percent) and other technologies available, to the extent that they are readily available and cost effective in the South Coast Air Basin when construction activities commence. Contract specifications shall be included in the proposed project construction documents, which shall be approved by the City of San Bernardino.*

PR4.2D *The developer shall require by contract specifications that all heavy-duty diesel-powered equipment operating and refueling at the project site use low-NO_X diesel fuel to the extent that it is readily available and cost effective (up to 125 percent of the cost of California Air Resources Board diesel) in the South Coast Air Basin at the time construction activities commence. This requirement shall not apply to diesel-powered trucks traveling to and from the project site. Contract specifications shall be included in the proposed project construction documents, which shall be approved by the City of San Bernardino.*

Approximately 200,000 cubic yards of soil would be exported off site to either the SANBAG grade separation project adjacent to the project site or one of the three servicing landfills identified in Section 4.12 (Utilities/Service Systems). The remainder of excavated soil would be balanced on site. Export of the soil off site would require approximately 57 round-trip truck trips per day for approximately 160 days during mass site grading, as each truck would have a capacity of 20 cubic yards. Table 4.2-9 (Estimated Peak Daily Construction Emissions in Pounds per Day) shows the emissions generated by project construction.

Table 4.2-9 Estimated Peak Daily Construction Emissions in Pounds per Day

Construction Phase	Peak Day Emissions in Pounds per Day					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$[a]
Mass Grading[a]	4	32	18	0	63	14
Fine Grading[b]	4	30	17	0	12	4
Trenching	2	15	9	0	1	1
Construction	9	71	104	0	4	3
Paving	4	16	11	0	1	1
Architectural Coating[c]	61	0	3	0	0	0
Maximum Daily Emissions	***61***	***71***	***104***	***0***	***63***	***14***
SCAQMD Thresholds	75	100	550	150	150	55
Significant Impact?	No	No	No	No	No	No

SOURCE: URBEMIS 2007. Calculation sheets are provided in Appendix B.

a. Assumes watering of the project site would occur three times per day.

b. Assumes watering of the project site would occur two times per day.

c. Assumes Low-VOC coating and 80 percent reduction from URBEMIS estimate.

As shown in Table 4.2-9, all construction emissions would be less than significant. Emissions of PM_{10} and $PM_{2.5}$ are reduced to below SCAQMD significance thresholds during site mass grading by implementation of project requirement PR4.2B. Project requirements PR4.2C and PR4.2D would further reduce NO_X emissions, although these emissions fall below SCAQMD thresholds of significance. Therefore, construction emissions of criteria pollutants would be ***less than significant***.

Significant and Unavoidable Impacts

Threshold	Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Impact 4.2-6 **Operation of the proposed project would violate an air quality standard or contribute substantially to an existing or projected air quality violation. This is considered a significant impact. Implementation of mitigation measures MM4.2-6(a) through MM4.2-6(e) would reduce this impact, but not to a less-than-significant level. Therefore, this is considered a *significant and unavoidable* impact.**

Implementation of the proposed project would generate long-term emissions from the operation of the proposed project. The SCAQMD recommended thresholds of significance for these new emissions were developed for individual development projects and are based on the SCAQMD's New Source Review emissions standards for individual sources of new emissions. They do not apply to cumulative development or multiple projects.

Estimated air emissions from the project's operational activities were calculated using the URBEMIS 2007 emissions model approved by ARB. URBEMIS is a planning tool for estimating air emissions related to land use projects. The model incorporates mobile source emissions from the EMFAC 2007 computer model as well as the Institute of Transportation Engineers (ITE) trip generation rates for vehicle emission projections.

The proposed project would generate long-term air quality impacts associated with its operation. The primary source of operational emissions would be motor vehicle emissions (mobile source emissions) generated from project-induced vehicle trips and truck trips associated with operation of the industrial warehouse. Other emissions, identified as "area source emissions," would be generated from natural gas consumption for water and space heating, landscape and building maintenance activities, and use of consumer products.

Operational emissions were estimated using the vehicle and area emissions modules of URBEMIS 2007. Vehicle trip generation rates for proposed land uses were obtained from the project's traffic study. The project would generate 1,303 ADT. Approximately 53 percent of trips were assumed to be passenger vehicle commuter trips and 47 percent were assumed to be truck trips. Due to the number of proposed loading docks, this assumption is conservative compared to the ITE 2007 assumptions for a similar facility, which estimates that up to 27 percent of the fleet would be trucks. Sixty percent of the truck trips were assumed to be long-trips, which is the average distance from the project site to the boundary of air basin (75 miles), and 40 percent of the truck trips were assumed to be short trips within the air basin, or half of the long-trip distance (38 miles). The default values generated by URBEMIS 2007 for vehicle traveling speed were used in the model runs.

The build-out year of the proposed project is assumed to be 2013. The model-predicted area source and mobile source emissions are shown in Table 4.2-10 (Project Daily Operational Emissions). Detailed modeling output sheets are provided in Appendix B.

Table 4.2-10 Project Daily Operational Emissions

Emissions Source	Emissions in Pounds per Day					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Water and Space Heating	0	1	1	0	0	0
Landscape Maintenance	0	0	2	0	0	0
Consumer Products	0	—	—	—	—	—
Architectural Coatings	4	—	—	—	—	—
Motor Vehicles	25	175	257	1	81	19
Total Daily Emissions	***29***	***176***	***260***	***1***	***81***	***19***
Thresholds (lb/day)	55	55	550	150	150	55
Significant Impact	No	**Yes**	No	No	No	No

SOURCE: URBEMIS 2007. Computer sheets are provided in Appendix B.

As shown in Table 4.2-10, the proposed project's operational emissions would not exceed the SCAQMD significance thresholds for criteria air pollutants during operation of the proposed project, with the exception of NO_X emissions from vehicle trips. The SCAQMD suggests mitigation measures for NO_X reduction in the CEQA Air Quality Handbook (SCAQMD 1993) and provides the emission reduction efficiency each measure. The following mitigation measures MM4.2-6(a) through MM4.2-6(e) are based on the mitigation measures suggested by the SCAQMD. Table 4.2-11 (Project Daily Operational Emissions) shows the estimated reduction in NO_X emission associated with each measure and total NO_X reduction. As shown in this table, even with implementation of all feasible mitigation measures, NO_X emissions would still exceed the SCAQMD significance threshold. This impact would be significant and unavoidable.

Table 4.2-11 Project Daily Operational Emissions

Mitigation Measure	*Emissions Reduction*
MM4.2-6(a)	0.2
MM4.2-6(b)	0.3
MM4.2-6(c)	2.1
MM4.2-6(d)	0.6
MM4.2-6(e)	0.4
Total Reduction	***(3.6%)***
Original NO_X Emissions (pound per day)	176
Mitigated NO_X Emissions (pound per day)	**170**
Threshold (pound per day)	55
Significant?	**Yes**

SOURCE: SCAQMD 1993

MM4.2-6(a) *As allowed by Caltrans, the project applicant shall provide a sidewalk on Palm Avenue to connect the project site to the bus stop on West Kendall Drive. The sidewalk would pass under I-215; therefore, this mitigation measure would require an encroachment permit from Caltrans for construction activities within the Caltrans right-of-way.*

Construction air emissions associated with implementation of this mitigation measure have been included in the estimated total construction emissions in Table 4.2-9 and discussed under Impact 4.2-5.

MM4.2-6(b) *Bicycle racks shall be incorporated into the project design and employee bathrooms shall be designed to include at least one shower.*

MM4.2-6(c) *The project site shall utilize a parking program that encourages carpooling. Employees will be required to pay for parking on site. Employees who carpool or use electric vehicles (EVs) or compressed natural gas (CNG) vehicles will be given a discount on the parking fee. Preferential parking spaces shall also be designated for employees who carpool, and use EVs/CNG Vehicles.*

MM4.2-6(d) *Operation of the project shall include a shuttle that provides service to nearby food establishments during lunch hours, and shuttle service to the adjacent residential neighborhood during the morning and evening commute hours.*

MM4.2-6(e) *The project shall include employee services on site, including lunch vending machines or other lunch option, an ATM, and childcare services.*

The proposed project would exceed SCAQMD significance thresholds during operation of the proposed project. As a result, the proposed project would violate the ambient air quality standard and contribute a projected air quality violation, resulting in a ***significant and unavoidable*** impact.

Threshold	Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?

Impact 4.2-7 **Operation of the proposed project would result in a cumulatively considerable net increase of any criteria pollutant for which the project region is classified non-attainment under an applicable federal or state ambient air quality standard (ozone, PM_{10}, and $PM_{2.5}$). This is considered a significant impact. Implementation of mitigation measures MM4.2-6(a) through MM4.2-6(e) would reduce these emissions, but not to less than significant. Therefore, this impact would be considered *significant and unavoidable*.**

A significant impact may occur if a project would add a cumulatively considerable contribution of a federal or state non-attainment pollutant. Because the Basin is currently in non-attainment for ozone (for which VOC and NO_X are precursors), PM_{10}, and $PM_{2.5}$ under national and state standards, projects could cumulatively exceed an air quality standard or contribute to an existing or projected air quality exceedance. With regard to determining the significance of the proposed project contribution, the SCAQMD neither recommends quantified analyses of cumulative construction or operational emissions, nor provides separate methodologies or thresholds of significance to be used to assess cumulative construction or operational impacts. Instead, the SCAQMD recommends that a project's potential contribution to cumulative impacts should be assessed using the same significance criteria as those for project specific impacts; that is, individual development projects that generate construction-related or operational emissions that exceed the SCAQMD-recommended daily thresholds for project-specific impacts, or would conflict with the 2007 AQMP, would also cause a cumulatively considerable increase in emissions for those pollutants for which the Basin is in non-attainment.

As discussed previously in Impact 4.2-5 and shown in Table 4.2-9, construction-related daily emissions associated with project development would not exceed any SCAQMD significance thresholds. Therefore, the proposed project would not result in a cumulatively considerable impact during construction. However, operation of the proposed project would generate emissions that would exceed the thresholds of significance recommended by the SCAQMD for NO_X, as discussed in Impact 4.2-6. Therefore, the emissions generated by operation of the proposed project would be cumulatively considerable and would constitute a substantial contribution to an existing or projected air quality violation. As described above

in Impact 4.2-6, compliance with mitigation measures MM4.2-6(a) through MM4.2-6(e) would reduce these emissions, but not to a less-than-significant level.

Because the proposed project would exceed SCAQMD thresholds for the pollutants and precursors of ozone for which the Basin is in non-attainment, the proposed project would make cumulatively considerable contributions of these pollutants during operation. Because no feasible mitigation beyond what is proposed for Impact 4.2-6 is available to further reduce these contributions to levels below SCAQMD thresholds, this impact is considered to be ***significant and unavoidable***.

For clarification, and as evident in the above analysis, this threshold essentially repeats the analysis provided in Impact 4.2-6 and applies it to the cumulative condition, whereby any individual project that exceeds the SCAQMD recommended daily thresholds for project-specific impacts is considered to cause a cumulatively considerable increase in emissions for those pollutants for which the Basin is in non-attainment.

Threshold	Would the project expose sensitive receptors to substantial concentrations of CO, NO_2, PM_{10} or $PM_{2.5}$?

Impact 4.2-8 **Construction activities associated with development of the proposed project would generate emissions that would result in an exceedance of localized significance thresholds for PM_{10} and $PM_{2.5}$ established by the SCAQMD, and, therefore, would expose sensitive receptors to substantial pollutant concentrations. This is considered a significant impact. Compliance with project requirements PR4.2B through PR4.2D and implementation of mitigation measure MM4.2-8 would reduce this impact, but not to a less-than-significant level. Therefore, this impact would be considered *significant and unavoidable*.**

As described above, the emissions from project construction activities were estimated using the URBEMIS 2007 emissions model. Construction emissions related to development of the proposed project are shown in Table 4.2-9. For the purpose of this analysis, all emissions shown in Table 4.2-9 are assumed to originate from the project site, such as use of diesel-powered construction equipment. The on-site project combined construction emissions were then used in a dispersion model to estimate associated concentrations at the closest off-site sensitive receptors.

As mentioned above, LSTs have been developed by the SCAQMD to determine maximum allowable concentrations of criteria air pollutants during construction of the proposed project. As stated above, LSTs have been established by the SCAQMD only for construction of projects and do not apply to emissions during operation. For projects greater than 5 acres in total area, dispersion modeling is done to determine worst-case pollutant concentration at sensitive receptors associated with construction of the project.

Localized concentrations were estimated, as discussed above in the Analytic Method section and assume implementation of project requirements PR4.2B through PR4.2D. Total worst-case construction emissions for the proposed project, after implementation of PR4.2B through PR4.2D, are included in

Table 4.2-12 (Total Construction Emissions and Localized Significance Thresholds) and compared to LSTs for SRA 34, the source receptor area that includes the City of San Bernardino.

Table 4.2-12 Total Construction Emissions and Localized Significance Thresholds

Pollutant	Averaging Time	Standard	Maximum Modeled Concentration
CO	1-Hour	17 ppm	4.20 ppm
	8-Hour	7 ppm	1.43 ppm
NO_2	1-Hour	0.08 ppm	2.88 ppm
PM_{10}	24-Hour	10.4 µg/m^3	12.06 µg/m^3
$PM_{2.5}$	24-Hour	10.4 µg/m^3	1.77 µg/m^3

SOURCE: PBS&J 2011; AERMOD (Lakes Environmental Software version 6.0) SCAQMD 2003, Localized Significance Threshold Methodology (calculation data sheets provided in Appendix B)

As shown in Table 4.2-12, localized CO 1-hour concentrations, CO 8-hour concentrations, NO_2 1-hour concentrations, and $PM_{2.5}$ 24-hour concentrations would not exceed SCAQMD thresholds during project construction. However, even with the implementation of project requirements PR4.2B through PR4.2D, the proposed project would exceed the SCAQMD threshold for PM_{10} during project construction. Mitigation measure MM4.2-8 requires all construction equipment to be EPA Tier 2 rated equipment. This mitigation measure would reduce the maximum modeled concentration of PM_{10} to 12.05 µg/m^3; however, this concentration would still exceed the significance threshold. The closest sensitive receptors to the project site would be the residential uses to the north of the project site. These uses could be exposed to criteria pollutant concentrations that exceed the SCAQMD's localized significance thresholds. As no further feasible mitigation is available to reduce these concentrations, this impact would be ***significant and unavoidable***.

MM4.2-8 *The developer shall require by contract specifications that construction equipment be EPA Tier 2 rated or higher.*

4.2.4 Cumulative Impacts

The geographic context for cumulative air quality impacts is Source Receptor Area (SRA 34), which includes the cities and communities of Bloomington, Colton, Del Rosa, East Highlands, Fontana, Grand Terrace, Highland, Muscoy, Rialto, San Bernardino, South Fontana, and Verdemont, including full build-out of these cities' and communities' General Plans and those cumulative projects identified in Table 3-2 (List of Related Development Projects) that are in SRA 34. This analysis, therefore, accounts for all anticipated cumulative growth within this geographic area, including ambient growth as specified in Section 4.11 (Transportation/Traffic). The significance of cumulative air quality impacts is determined according to the impact methodology recommended by the SCAQMD.

With regard to impacts relating to the exposure of sensitive receptors to substantial toxic pollutant concentrations, because these impacts are site-specific and localized, the geographic context for this analysis is the City of San Bernardino. For the purposes of impacts relating to objectionable odors, the

geographic context is also considered to be the City of San Bernardino, due to the localized nature of odor impacts.

Threshold	Would the project conflict with or obstruct implementation of the applicable air quality plan?

The AQMP incorporates land use assumptions from local general plans and regional growth projections developed by SCAG to estimate regional stationary and mobile air emissions. If the cumulative projects are individually consistent with the general plan, or are consistent with the regional growth projections, then the cumulative impacts would be accounted for in the AQMP.

As discussed previously, the proposed project is consistent with the use designated for the project site in the City's General Plan. Employment opportunities associated with the proposed distribution center could result in population growth, as discussed in Impact 4.2-1, since the proposed project is consistent with the designation for the land use in the City's General Plan, the growth associated with the proposed project is included in the growth projection for the City of San Bernardino in the General Plan. As these growth projections are used to formulate SCAG's regional growth projections, which in turn are used to formulate growth projections in the AQMP, growth associated with the proposed project is consistent with the growth and emissions accounted for in the 2007 AQMP. Therefore, this cumulative impact would be ***less than significant***.

Threshold	Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

SCAQMD recommends that individual projects that exceed the SCAQMD recommended daily thresholds for project-specific impacts be considered to cause a cumulatively considerable increase in emissions for those pollutants for which the Basin is in non-attainment. Please refer to Impact 4.2-5 and Impact 4.2-6 for a discussion of construction-related and operational impacts associated with a violation of any air quality standard or air quality violation (both of which are repeated in Impact 4.2-7, which addresses cumulative impacts). As discussed above, the cumulative impact is significant, the projects' contribution during operation is cumulatively considerable, and the cumulative impact would be ***significant and unavoidable***.

Threshold	Would the project expose sensitive receptors to substantial pollutant concentrations?

HRAs were performed to estimate the potential health risks associated with TACs generated by operation of the proposed project and are included as Appendix C of this EIR. As discussed previously, the significance of cumulative air quality impacts is typically determined according to the project-specific impact methodology recommended by the SCAQMD, and as discussed in Impact 4.2-2, the maximum cancer risk predicted at a residence near the project site was 1.27 in 1 million, located north of Kendall Drive between Palm Avenue and Olive Avenue, while the maximum cancer risk predicted at a sensitive receptor near the project site was 0.08 in 1 million at the Crestview Baptist Church and 0.01 in 1 million at Palm Elementary School, and the maximum cancer risk predicted at an offsite worker receptor near

the project site was 3.78 in 1 million, located along the fenceline between the project site and the Denny's Restaurant to the west. In addition, the HRA results for the proposed project indicate the worst-case, chronic, non-cancer HI for DPM associated with the construction activities for the proposed project is 0.00487 at the fenceline between the project site and the Denny's Restaurant, which is less than one, the threshold value at or above which additional analysis and mitigation are deemed necessary by the SCAQMD. If the HI is less than one, then the HRA is complete and no further analysis is required. Because the DPM Hazard Index is less than one at the PMI, the HI is less than one at all sensitive receptors. As the significance of cumulative air quality impacts is typically determined according to the project-specific impact methodology and thresholds recommended by the SCAQMD, there are no significant cumulative adverse health impacts expected from DPM emissions from construction activities associated with the proposed project. Even if the cumulative impact were significant, the project would not make a cumulatively considerable contribution to this impact. In addition, the SCAQMD considers project-specific impacts that are determined to be less than significant to also be cumulatively less than significant. Consequently, this cumulative impact would be ***less than significant***.

With regard to construction, the proposed project would not expose sensitive receptors to substantial concentrations of CO, NO_2, or $PM_{2.5}$, but could expose sensitive receptors to concentrations that exceed the SCAQMD LST for PM_{10}, which would result in a significant, localized cumulative impact. As shown in Impact 4.2-7, the proposed project is not expected to generate CO 1-hour concentrations, CO 8-hour concentrations, NO_2 1-hour concentrations, or $PM_{2.5}$ 24-hour concentrations that would exceed established SCAQMD significance thresholds. However, the proposed project would exceed the SCAQMD threshold for PM_{10} during project construction. Under SCAQMD's voluntary standards, if a project exceeds an LST for a particular source receptor area, then the proposed project would be considered to contribute to a violation of a state or federal ambient air quality standard for pollutant concentrations. The closest sensitive receptors are residences located to the north of the project site. These uses could be exposed to criteria pollutant concentrations which exceed the SCAQMD's localized significance thresholds. Implementation of PR4.2B and MM4.2-7(a) would reduce this impact, but not to a less-than-significant level. As no further feasible mitigation is available to reduce these concentrations, this cumulative impact would be ***significant and unavoidable***, and this impact would be cumulatively considerable.

Future projects could result in long-term future exposure of sensitive receptors to substantial pollutant concentrations. CO levels are projected to be lower in 2010 and 2030 than in 2007 due to improvements in vehicle emission rates predicted by the ARB. As discussed in Impact 4.2-3, the proposed project would not contribute to an existing violation of the federal and state 1-hour or 8-hour ambient air quality standard for CO. The future CO concentrations at the study intersections in 2010 and 2030 are based on the projected future traffic volumes from the study intersections contained in the project traffic study, and take into account emissions from the proposed project, future ambient growth, and cumulative projects shown in Table 3-2. As shown in Table 4.2-7 (Project Localized Carbon Monoxide Concentrations for Year 2010) and Table 4.2-8 (Project Localized Carbon Monoxide Concentrations for Year 2030), future 1-hour CO concentrations and future 8-hour CO concentrations would not exceed federal and state air quality standards for CO concentrations. There would be a less-than-significant cumulative impact. Further, because CO concentrations would not exceed federal and state air quality standards for CO concentrations, CO hotspots would not occur near these intersections in the future,

and the proposed project would not result in a cumulatively considerable contribution to this cumulative impact. Therefore, the cumulative impact of the proposed project would be ***less than significant***.

Threshold	Would the project create objectionable odors affecting a substantial number of people?

For this threshold, the relevant geographic area is the City of San Bernardino, as represented by full implementation of the General Plan, and related projects projected to be built including primarily residential and commercial developments, and restaurants. Odors resulting from the construction of these projects are not likely to affect a substantial number of people, due to the fact that construction activities do not usually emit offensive odors. As discussed in Impact 4.2-4, although construction activities occurring in association with the proposed project could generate airborne odors associated with the operation of construction vehicles (e.g., diesel exhaust) and the application of interior and exterior architectural coatings, these emissions would only occur during daytime hours, would generally be restricted to the immediate vicinity of the construction site and activity, and would not affect a substantial number of people. Therefore, a cumulative impact would not occur during construction. Operational odors are generally site specific and not cumulative in nature because odors disperse beyond the odor source. Additionally, the odor impacts resulting from industrial projects are not expected to affect a substantial number of people, as activities typically associated with these uses do not emit offensive odors and solid waste from these projects would be stored in special areas and in containers, as required with incorporation of project requirement PR4.2A into the proposed project. Thus, as the proposed project is neither expected to generate substantial odors, nor would any existing or anticipated nearby uses generate substantial odors, a cumulative impact would not occur.

4.2.5 References

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