3.3 - Air Quality

3.3.1 - Introduction

This Air Quality section describes the existing air quality conditions and potential local and regional short-term impacts associated with Project construction and long-term impacts associated with the operation of the Project. Section 15125 of the State CEQA Guidelines requires EIRs to include a description of the physical environmental conditions in the area of a project that exist at the time that the Notice of Preparation (NOP) is circulated. These environmental conditions normally constitute the baseline physical conditions relative to which the CEQA lead agency evaluates the change in conditions that would result from project implementation. The NOP for this Draft EIR was issued on February 27, 2009. Therefore, environmental conditions as of February 2009 represent the baseline for CEQA purposes. To evaluate the footprint impacts of the Proposed Action (e.g., effects on air quality), the conditions in 2009 are considered the baseline. Buildout of the Project is then added to existing conditions in order to determine whether Project implementation would substantially remove or impact the resources, thereby resulting in a significant impact on the environment. Data used to determine air quality impacts were derived from information contained in the Air Quality Analysis Report prepared on October 3, 2011 by Michael Brandman Associates (MBA 2011) contained in the Draft Environmental Impact Report (Draft EIR) as Appendix B. Therefore, data used to derive baseline conditions is based on existing conditions at the time of NOP issuance (February 27, 2009 through March 31, 2009) and are appropriate to use within the following analysis.

3.3.2 - Regulatory Setting

Air pollutants are regulated at the national, state, and air basin level with each agency having a different level of regulatory responsibility. The United States Environmental Protection Agency (EPA) regulates at the national level. The California Air Resources Board (ARB) regulates at the state level while the South Coast Air Quality Management District (SCAQMD) regulates at the air basin level.

The EPA handles global, international, national, and interstate air pollution issues and policies. The EPA sets national vehicle and stationary source emission standards, oversees approval of all State Implementation Plans (SIP), provides research and guidance in air pollution programs, and sets National Ambient Air Quality Standards also known as national standards. There are national standards for six common air pollutants, called criteria air pollutants, which were identified in the federal Clean Air Act of 1970. The six criteria pollutants are ozone, particulate matter (PM_{10} and $PM_{2.5}$), nitrogen dioxide, carbon monoxide (CO), lead, and sulfur dioxide. The national standards were set to protect the health and welfare of sensitive individuals.

The ARB has overall responsibility for statewide air quality maintenance and air pollution prevention. The SIP for the State of California is administered by the ARB. A SIP is a document prepared by each state describing existing air quality conditions and measures that will be followed to attain and

maintain national standards. The ARB also administers the California ambient air quality standards or State standards, for the ten air pollutants designated in the California Clean Air Act. The ten State air pollutants are visibility reducing particulates, hydrogen sulfide, sulfates, vinyl chloride, and the six national criteria pollutants. Table 3.3-1 provides a listing of the national and State ambient air quality standards, relevant pollutant effects, properties, and emission sources. Both the national and State standards are periodically updated, as more medical research is available regarding the health effects of the criteria pollutants.

Table 3.3-1: Air Pollutants and Ambient Air Quality Standards

Air Pollutant	Averaging Time	California Standard	National Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Ozone	1 Hour	0.09 ppm	—	(a) Decrease of pulmonary function and localized lung edema in humans and animals; (b) risk to public health implied by alterations in pulmonary morphology and host defense in animals; (c) increased mortality risk; (d) altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (e) vegetation damage; (f) property damage.	Ozone is a photochemical pollutant as it is not emitted directly into the atmosphere, but is formed by a complex series of chemical reactions between volatile organic compounds (VOC), NO_x, and sunlight. Ozone is a regional pollutant that is generated over a large area and is transported and spread by the wind.	Ozone is a secondary pollutant; thus, it is not emitted directly into the lower level of the atmosphere. The primary sources of ozone precursors (VOC and NOx) are mobile sources (on-road and off-road vehicle exhaust).
	8 Hour	0.070 ppm	0.075 ppm			
Carbon monoxide (CO)	1 Hour	20 ppm	35 ppm	(a) Aggravation of angina pectoris (chest pain) and other aspects of coronary heart disease; (b) decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) impairment of central nervous system functions; (d) possible increased risk to fetuses.	CO is a colorless, odorless, toxic gas. CO is somewhat soluble in water; therefore, rainfall and fog can suppress CO conditions. CO enters the body through the lungs, dissolves in the blood, replaces oxygen as an attachment to hemoglobin, and reduces available oxygen in the blood.	CO is produced by incomplete combustion of carbon-containing fuels (e.g., gasoline, diesel fuel, and biomass). Sources include motor vehicle exhaust, industrial processes (metals processing and chemical manufacturing), residential wood burning, and natural sources.
	8 Hour	9.0 ppm	9.0 ppm			
Nitrogen dioxide [c] (NO_2)	1 Hour	0.18 ppm	0.100 ppm	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; (c) contribution to atmospheric discoloration.	During combustion of fossil fuels, oxygen reacts with nitrogen to produce nitrogen oxides - NO_x (NO, NO_2, NO_3, N_2O, N_2O_3, N_2O_4, and N_2O_5). NO_x is a precursor to ozone, PM_{10}, and $PM_{2.5}$ formation. NO_x can react with compounds to form nitric acid and related particles.	NO_x is produced in motor vehicle internal combustion engines and fossil fuel-fired electric utility and industrial boilers. NO_2 concentrations near major roads can be 30 to 100 percent higher than those at monitoring stations.
	Annual	0.030 ppm	0.053 ppm			

Table 3.3 1 (cont.): Air Pollutants and Ambient Air Quality Standards

Air Pollutant	Averaging Time	California Standard	National Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Sulfur dioxide (SO_2)	1 Hour	0.25 ppm	0.075 ppm[d]	Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma. Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient sulfur dioxide levels. It is not clear whether the two pollutants act synergistically or one pollutant alone is the predominant factor.	Sulfur dioxide is a colorless, pungent gas. At levels greater than 0.5 ppm, the gas has a strong odor, similar to rotten eggs. Sulfur oxides (SO_x) include sulfur dioxide and sulfur trioxide. Sulfuric acid is formed from sulfur dioxide, which can lead to acid deposition and can harm natural resources and materials. Although sulfur dioxide concentrations have been reduced to levels well below state and national standards, further reductions are desirable because sulfur dioxide is a precursor to sulfate and PM_{10}.	Human caused sources include fossil-fuel combustion, mineral ore processing, and chemical manufacturing. Volcanic emissions are a natural source of sulfur dioxide. The gas can also be produced in the air by dimethylsulfide and hydrogen sulfide. Sulfur dioxide is removed from the air by dissolution in water, chemical reactions, and transfer to soils and ice caps. The sulfur dioxide levels in the State are well below the maximum standards.
	3 Hour[1]	—	0.5 ppm			
	24 Hour	0.04 ppm	—			
Particulate matter (PM_{10})	24 hour	50 µg/m^3	150 µg/m^3	(a) Exacerbation of symptoms in sensitive patients with respiratory or cardiovascular disease; (b) declines in pulmonary function growth in children; (c) increased risk of premature death from heart or lung diseases in the elderly. Daily fluctuations in $PM_{2.5}$ levels have been related to hospital admissions for acute respiratory conditions, school absences, and increased medication use in children and adults with asthma.	Suspended particulate matter is a mixture of small particles that consist of dry solid fragments, droplets of water, or solid cores with liquid coatings. The particles vary in shape, size, and composition. PM_{10} refers to particulate matter that is between 2.5 and 10 microns in diameter, (1 micron is one-millionth of a meter). $PM_{2.5}$ refers to particulate matter that is 2.5 microns or less in diameter.	Stationary sources include fuel combustion for electrical utilities, residential space heating, and industrial processes; construction and demolition; metals, minerals, and petrochemicals; wood products processing; mills and elevators used in agriculture; erosion from tilled lands; waste disposal, and recycling. Mobile or transportation-related sources are from vehicle exhaust and road dust.
	Mean	20 µg/m^3	—			
Particulate matter ($PM_{2.5}$)	24 Hour	—	35 µg/m^3			
	Annual	12 µg/m^3	15.0 µg/m^3			
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per kilometer — visibility of ten miles or more (0.07 - 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent.				

Table 3.3 1 (cont.): Air Pollutants and Ambient Air Quality Standards

Air Pollutant	Averaging Time	California Standard	National Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Sulfates	24 Hour	25 µg/m^3	—	(a) Decrease in ventilatory function; (b) aggravation of asthmatic symptoms; (c) aggravation of cardio-pulmonary disease; (d) vegetation damage; (e) degradation of visibility; (f) property damage.	The sulfate ion is a polyatomic anion with the empirical formula SO_4^{2-}. Sulfates occur in combination with metal and/or hydrogen ions. Many sulfates are soluble in water.	Sulfates are particulates formed through the photochemical oxidation of sulfur dioxide. In California, the main source of sulfur compounds is combustion of gasoline and diesel fuel.
Lead[b]	30-day	1.5 µg/m^3	—	Lead accumulates in bones, soft tissue, and blood and can affect the kidneys, liver, and nervous system. It can cause impairment of blood formation and nerve conduction. The more serious effects of lead poisoning include behavior disorders, mental retardation, neurological impairment, learning deficiencies, and low IQs. Lead may also contribute to high blood pressure and heart disease.	Lead is a solid heavy metal that can exist in air pollution as an aerosol particle component. An aerosol is a collection of solid, liquid, or mixed-phase particles suspended in the air. Lead was first regulated as an air pollutant in 1976. Leaded gasoline was first marketed in 1923 and was used in motor vehicles until around 1970. Lead concentrations have not exceeded state or national air quality standards at any monitoring station since 1982.	Lead ore crushing, lead-ore smelting, and battery manufacturing are currently the largest sources of lead in the atmosphere in the United States. Other sources include dust from soils contaminated with lead-based paint, solid waste disposal, and crustal physical weathering. Lead can be removed from the atmosphere through deposition to soils, ice caps, oceans, and inhalation.
	Quarter	—	1.5 µg/m^3			
	Rolling 3-month average	—	0.15 µg/m^3			
Vinyl chloride[b]	24 Hour	0.01 ppm	—	Short-term exposure to high levels of vinyl chloride in the air causes central nervous system effects, such as dizziness, drowsiness, and headaches. Epidemiological studies of occupationally exposed workers have linked vinyl chloride exposure to development of a rare cancer, liver angiosarcoma, and have suggested a relationship between exposure and lung and brain cancers.	Vinyl chloride, or chloroethene, is a chlorinated hydrocarbon and a colorless gas with a mild, sweet odor. In 1990, ARB identified vinyl chloride as a toxic air contaminant and estimated a cancer unit risk factor.	Most vinyl chloride is used to make polyvinyl chloride plastic and vinyl products, including pipes, wire and cable coatings, and packaging materials. It can be formed when plastics containing these substances are left to decompose in solid waste landfills. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites.

Table 3.3 1 (cont.): Air Pollutants and Ambient Air Quality Standards

Air Pollutant	Averaging Time	California Standard	National Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Hydrogen sulfide	1 Hour	0.03 ppm	—	High levels of hydrogen sulfide can cause immediate respiratory arrest. It can irritate the eyes and respiratory tract and cause headache, nausea, vomiting, and cough. Long exposure can cause pulmonary edema.	Hydrogen sulfide (H_2S) is a flammable, colorless, poisonous gas that smells like rotten eggs.	Manure, storage tanks, ponds, anaerobic lagoons, and land application sites are the primary sources of hydrogen sulfide. Anthropogenic sources include the combustion of sulfur containing fuels (oil and coal).
Volatile organic compounds (VOC)		There are no state or national ambient air quality standards for VOCs because they are not classified as criteria pollutants.		Although health-based standards have not been established for VOCs, health effects can occur from exposures to high concentrations because of interference with oxygen uptake. In general, concentrations of VOCs are suspected to cause eye, nose, and throat irritation; headaches; loss of coordination; nausea; and damage to the liver, the kidneys, and the central nervous system. Many VOCs have been classified as toxic air contaminants.	Reactive organic gases (ROGs), or VOCs, are defined as any compound of carbon—excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate—that participates in atmospheric photochemical reactions. Although there are slight differences in the definition of ROGs and VOCs, the two terms are often used interchangeably.	Indoor sources of VOCs include paints, solvents, aerosol sprays, cleansers, tobacco smoke, etc. Outdoor sources of VOCs are from combustion and fuel evaporation. A reduction in VOC emissions reduces certain chemical reactions that contribute to the formulation of ozone. VOCs are transformed into organic aerosols in the atmosphere, which contribute to higher PM_{10} and lower visibility.
Benzene		There are no ambient air quality standards for benzene.		Short-term (acute) exposure of high doses from inhalation of benzene may cause dizziness, drowsiness, headaches, eye irritation, skin irritation, and respiratory tract irritation, and at higher levels, loss of consciousness can occur. Long-term (chronic) occupational exposure of high doses has caused blood disorders, leukemia, and lymphatic cancer.	Benzene is a VOC. It is a clear or colorless light-yellow, volatile, highly flammable liquid with a gasoline-like odor. The EPA has classified benzene as a "Group A" carcinogen.	Benzene is emitted into the air from fuel evaporation, motor vehicle exhaust, tobacco smoke, and from burning oil and coal. Benzene is used as a solvent for paints, inks, oils, waxes, plastic, and rubber. It is used in the extraction of oils from seeds and nuts and in the manufacture of detergents, explosives, and pharmaceuticals.

Table 3.3 1 (cont.): Air Pollutants and Ambient Air Quality Standards

Air Pollutant	Averaging Time	California Standard	National Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Diesel particulate matter (DPM)		There are no ambient air quality standards for DPM.		Some short-term (acute) effects of DPM exposure include eye, nose, throat, and lung irritation, coughs, headaches, light-headedness, and nausea. Studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems. Human studies on the carcinogenicity of DPM demonstrate an increased risk of lung cancer, although the increased risk cannot be clearly attributed to diesel exhaust exposure.	DPM is a source of $PM_{2.5}$—diesel particles are typically 2.5 microns and smaller. Diesel exhaust is a complex mixture of thousands of particles and gases that is produced when an engine burns diesel fuel. Organic compounds account for 80 percent of the total particulate matter mass, which consists of compounds such as hydrocarbons and their derivatives, and polycyclic aromatic hydrocarbons and their derivatives. Fifteen polycyclic aromatic hydrocarbons are confirmed carcinogens, a number of which are found in diesel exhaust.	Diesel exhaust is a major source of ambient particulate matter pollution in urban environments. Typically, the main source of DPM is from combustion of diesel fuel in diesel-powered engines. Such engines are in on-road vehicles such as diesel trucks, off-road construction vehicles, diesel electrical generators, and various pieces of stationary construction equipment.

Abbreviations:
ppm = parts per million (concentration) $\mu g/m^3$ = micrograms per cubic meter Annual = Annual Arithmetic Mean 30-day = 30-day average Quarter = Calendar quarter

[a] National standard refers to the primary national ambient air quality standard, or the levels of air quality necessary, with an adequate margin of safety to protect the public health. All standards listed are primary standards except for 3 Hour SO_2, which is a secondary standard. A secondary standard is the level of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

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

[c] Effective April 12, 2010, to attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb, or 188 $\mu g/m^3$

[d] To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.

Source: Michael Brandman Associates 2011.

The air pollution control agency for the South Coast Air Basin (Basin) is the SCAQMD. The SCAQMD is responsible for controlling emissions primarily from stationary sources within its jurisdiction. The SCAQMD maintains air quality monitoring stations throughout the Basin. The SCAQMD, in coordination with the Southern California Association of Governments (SCAG), is also responsible for developing, updating, and implementing the Air Quality Management Plan (AQMP) for the Basin. An AQMP is a plan prepared by an air pollution control district for a county or region designated as a national non-attainment area to bring the area into compliance with the requirements of the national and/or California ambient air quality standards. (Air basins where ambient air quality standards are exceeded are referred to as "nonattainment" areas). The AQMP for the Basin establishes a program of rules and regulations administered by SCAQMD to attain and maintain the State and national air quality standards

The current AQMP for the Basin is the 2007 AQMP, which was adopted by the SCAQMD on June 1, 2007. On July 13, 2007, the SCAQMD Board adopted 2007 Final AQMP Transportation Conformity Budgets and directed the Executive Officer to forward them to ARB for its approval and subsequent submittal to the EPA. On September 27, 2007, ARB adopted the State Strategy for the 2007 State Implementation Plan and the 2007 AQMP as part of the State Implementation Plan.

The 2007 AQMP incorporates significant new emissions inventories, ambient measurements, scientific data, control strategies, and air quality modeling. The 2007 AQMP outlines a detailed strategy for meeting the federal health-based standards for $PM_{2.5}$ by 2015 and 8-hour ozone by 2024 while accounting for and accommodating future expected growth. Most of the reductions will be from mobile sources, which is currently responsible for about 75 percent of all smog and particulate forming emissions. The 2007 AQMP includes 37 control measures proposed for adoption by the SCAQMD, including measures to reduce emissions from new commercial and residential developments, more reductions from industrial facilities, and reductions from wood-burning fireplaces and restaurant charbroilers.

The following includes, but is not limited to, the SCAQMD and ARB rules and regulations that the Project must comply with:

SCAQMD

- **SCAQMD Rule 402** prohibits a person from discharging from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property.
- **SCAQMD Rule 403** requires fugitive dust activities to follow best available control measures to reduce emissions of fugitive dust from a large construction operation defined as construction activities on property containing 50 or more acres of disturbed surface area or any earth-moving activity with a daily earth-moving volume of 5,000 cubic yards. Best available control

measures are accounted for in the California Emissions Estimator Model (CalEEMod) used to estimate construction emissions as "mitigation" although the measures contained in CalEEMod are not technically mitigation but are required under Rule 403. The best available control measures and associated measure contained in CalEEMod are provided in Table 3.3-2 and are incorporated into this analysis.

Table 3.3-2: Best Available Control Measures – SCAQMD Rule 403

Best Available Control Measure	Associated Measure in CalEEMod
Clearing and Grubbing 02-1 Maintain stability of soil through pre-watering of site prior to clearing and grubbing 02-2 Stabilize soil during clearing and grubbing activities 02-3 Stabilize soil immediately after clearing and grubbing activities Earth Moving Activities 08-1 Pre-apply water to depth of proposed cuts 08-2 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 08-3 Stabilize soils once earth-moving activities are complete	- Water exposed surfaces three times per day
Import/Export of Bulk Materials 09-1 Stabilize material while loading to reduce fugitive dust emissions 09-2 Maintain at least six inches of freeboard on haul vehicles 09-3 Stabilize material while transporting to reduce fugitive dust emissions 09-4 Stabilize material while unloading to reduce fugitive dust emissions 09-5 Comply with Vehicle Code Section 23114	- Water exposed surfaces three times per day
Landscaping 10-1 Stabilize soils, materials, slopes Guidance: Apply water to materials to stabilize; Maintain materials in a crusted condition; Maintain effective cover over materials; Stabilize sloping surfaces using soil until vegetation or ground cover can effectively stabilize the slopes; Hydroseed prior to rain season	- Replace ground cover in disturbed areas quickly
Staging Areas 13-1 Stabilize staging areas during use by limiting vehicle speeds to 15 miles per hour	- Reduce speed on unpaved roads to 15 miles per hour.
Traffic Areas for Construction Activities 15-1 Stabilize all off-road traffic and parking areas 15-2 Stabilize all haul routes 15-3 Direct construction traffic over established haul routes Guidance: Apply gravel/paving to all haul routes as soon as possible to all future roadway areas; Barriers can be used to ensure vehicles are only used on established parking areas/haul routes	- Water exposed surfaces three times per day
Source: Michael Brandman Associates, Air Quality Analysis Report, 2011.	

- **SCAQMD Rule 461** applies to the transfer of gasoline from any tank truck, trailer, or railroad tank car into any stationary storage tank or mobile fueler, and from any stationary storage tank or mobile fueler into any mobile fueler or motor vehicle storage tank.
- **SCAQMD Rule 481** applies to all spray painting and coating operations and equipment such that a person shall not operate any spray painting or coating equipment unless the equipment is inside a control enclosure, coatings are applied with HVLP, electrostatic and/or airless spray equipment, or an alternative method having the effectiveness equal to or greater than a control booth or HVLP, electrostatic and/or airless spray equipment.
- **SCAQMD Rule 1108** governs the sale, use and manufacturing of asphalt and limits the VOC content in asphalt used in the Basin. This rule regulates the VOC content of asphalt available for use during construction.
- **SCAQMD Rule 1113** governs the sale, use, and manufacturing of architectural coating and limits the VOC content in paints and paint solvents.
- **SCAQMD Rule 1186** reduces PM_{10} emissions from paved and unpaved roads.
- **SCAQMD Rule 1303** governs the permitting of re-located or new major emission sources, requiring Best Available Control Measures (BACM) and setting significance limits for PM_{10} among other pollutants.
- **SCAQMD Rule 1401** specifies limits for maximum individual cancer risk, cancer burden, non-cancer acute hazard index, and chronic hazard index from new permit units, relocations, or modifications to existing permit units, which emit toxic air contaminants, listed within the rule.
- **Rule 2202 provides** employers with a menu of options to reduce mobile source emissions generated from employee commutes, to comply with federal and State Clean Air Act requirements, Health & Safety Code Section 40458, and Section 182(d)(1)(B) of the federal Clean Air Act. It applies to any employer who employs 250 or more employees on a full or part-time basis at a worksite for a consecutive six-month period calculated as a monthly average.

ARB

- **ARB Air Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling** limits the idling of diesel vehicles to reduce emissions of toxics and criteria pollutants. The driver of any vehicle subject to this section: (1) shall not idle the vehicle's primary diesel engine for greater than five minutes at any location; and (2) shall not idle a diesel-fueled auxiliary power system (APS) for more than five minutes to power a heater, air conditioner, or any ancillary equipment on the vehicle if it has a sleeper berth and the truck is located within 100 feet of a restricted area (homes and schools).
- **ARB Air Toxics Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRUs) and TRU Generator Sets, and Facilities Where TRUs Operate** implements the

provisions of the ARB Diesel Risk Reduction Program that limits the emissions of diesel particulate matter emissions from TRUs that operate in California.

- **ARB Final Regulation Order, Requirements to Reduce Idling Emissions from New and In-Use Trucks**, beginning in 2008, would require that new 2008 and subsequent model-year heavy-duty diesel engines be equipped with an engine shutdown system that automatically shuts down the engine after 300 seconds of continuous idling operation once the vehicle is stopped, the transmission is set to "neutral" or "park," and the parking brake is engaged.
- **ARB Final Regulation Order, Adoption of the Statewide Truck and Bus Regulations,** would require affected trucks and buses to meet performance requirements between 2011 and 2023 such that by January 1, 2023 all vehicles must have a 2010 model year engine or equivalent.

3.3.3 - Existing Conditions

Physical Setting

The Project is located in the City of Redlands in the County of San Bernardino. The Project site is primarily vacant land previously tended as an orchard and primarily consists of fallow agricultural land. Surrounding land uses include fallow agricultural land to the north, south, and the northeast, a residential subdivision to the east and State Route 210 to the west. The Project site is relatively flat, with slopes of two percent or less and is located at approximately 1,270 feet above mean sea level (msl).

Climate Setting

The Basin is bounded on the west by the Pacific Ocean and on the north and east by the San Gabriel, San Bernardino, and San Jacinto Mountains. The Basin consists of Orange County, Los Angeles County except for the Antelope Valley, the non-desert portion of western San Bernardino County, and the western and Coachella Valley portions of Riverside County.

The distinctive climate of the Basin is determined primarily by its terrain and geographical location. Regional meteorology is dominated by a persistent synoptic high-pressure area that commonly resides over the eastern Pacific Ocean. Seasonal variations in the strength and position of this pressure system cause changes in the regional weather patterns. Warm summers, mild winters, infrequent rainfall, moderate daytime onshore breezes, and moderate humidity characterize local climatic conditions. This normally mild climatic condition is occasionally interrupted by periods of hot easterly winds associated with Santa Ana winds, winter storms, and infrequent summer thunderstorms.

The annual average temperature varies little throughout much of the Basin, ranging from the low to middle 60s, measured in degrees Fahrenheit. With more pronounced oceanic influence, coastal areas show less variability in annual minimum and maximum temperatures than inland areas where the Project site is located. The majority of the annual rainfall in the Basin occurs between November and April. Summer rainfall is minimal and generally limited to scattered thunderstorms in the coastal

regions and slightly heavier showers in the eastern portion of the Basin along the coastal side of the mountains.

The dominant daily wind pattern across southern California is an onshore daytime breeze and an offshore nighttime breeze. The predominant wind direction in the Project area is from the west-northwest during much of the year with the exception of some of the days during the October to December period when the area experiences strong Santa Ana winds from the north and northeast directions. The Santa Ana winds are dry, sometimes hot and dusty winds in southern California that blow westward through the canyons toward the coastal areas. The local dominant wind blows predominantly from the west quadrant. The annual average annual wind speed is about two miles per hours (mph).

The Basin is located in an area of high air pollution potential, particularly from June through September due to the juxtaposition of the Basin's topography and synoptic weather influences. Even though the Basin has a semiarid climate, air near the surface is generally moist because of the presence of a shallow marine air layer. With very low average wind speeds and the inland mountains that act as a barrier, there is a limited capacity to disperse air pollutants horizontally. During spring and summer, air pollution created in the coastal areas and around the central Los Angeles area is transported inland until it reaches the mountains where the combination of mountains and inversion layers generally prevent further dispersion. This poor ventilation results in a gradual degradation of air quality from the coastal areas to inland areas. Air pollutants can be transported 60 miles or more inland by ocean air during the afternoons.

Local Air Quality

Existing levels of ambient air quality, historical trends, and future projections of air quality in the Project area are best documented from measurements made near the Project site. The SCAQMD maintains an extensive air-monitoring network that measures levels of several air pollutants throughout the Basin. The SCAQMD has subdivided the Basin into 36 Source-Receptor Areas (SRA) many containing one or more monitoring stations. These SRAs are designated to provide a general representation of the local meteorology, terrain, and air quality conditions within the particular geographical area.

The Project is located within SRA 35, East San Bernardino Valley. Various air pollutants are measured within SRA 35 at the SCAQMD's Redlands air monitoring station. The pollutant levels from SRA 35 were used to comprise a "background" for the Project location. Table 3.3-3 summarizes the air monitoring data for SRA 35 covering the period 2006-2008, the most current published 3-year monitoring period. Where data for a pollutant was not measured at the Redlands air monitoring station, the data from the nearest air monitoring station within the Basin measuring that pollutant was used.

Attainment Status

Air basins where ambient air quality standards are exceeded are designated as "nonattainment" areas. If standards are met, the area is designated as an "attainment" area. If there is inadequate or inconclusive data to make a definitive attainment designation, they are considered "unclassified." The Basin is designated as nonattainment for the following standards:

- State and national PM_{10} and $PM_{2.5}$ standards;
- National nitrogen dioxide annual standard;
- State ozone 1-hour standard; and
- State and national 8-hour ozone standard.

Table 3.3-3: Air Quality Monitoring Summary

Air Pollutant, Location	Averaging Time	Item	2008	2009	2010
Ozone	1 Hour	Max 1 Hour (ppm)	0.154	0.45	0.128
		Days > State Standard (0.09 ppm)	72	62	43
	8 Hour	Max 8 Hour (ppm)	0.121	0.122	0.112
		Days > State Standard (0.07 ppm)	100	91	82
		Days > National Standard (0.075 ppm)	75	73	61
Carbon monoxide	1 Hour	Max 1 Hour (ppm)	2	3	3
		Days > State Standard (20 ppm)	0	0	0
		Days > National Standard (35 ppm)	0	0	0
	8 Hour	Max 8 Hour (ppm)	1.68	2.20	1.73
		Days > State Standard (9.0 ppm)	0	0	0
		Days > National Standard (9 ppm)	0	0	0
Nitrogen dioxide	Annual	Annual Average (ppm)	0.022	0.020	0.019
	1 Hour	Max 1 Hour (ppm)	0.091	0.084	0.069
		Days > State Standard (0.18 ppm)	0	0	0
	1 Hour 98th	1 Hour 98th Percentile	0.069	0.07	ND
Sulfur dioxide	Annual	Annual Average (ppm)	0.001	0.000	ID
	24 Hour	Max 24 Hour (ppm)	0.003	0.002	0.002
		Days > State Standard (0.04 ppm)	0	0	0
Inhalable coarse particles (PM_{10})	Annual	Annual Average ($\mu g/m^3$)	29.1	30.2	25.9
	24 hour	24 Hour ($\mu g/m^3$)	58	52	57
		Days > State Standard (50 $\mu g/m^3$)	12	0	1
		Days > National Standard (150 $\mu g/m^3$)	0	0	0

Table 3.3-3 (cont.): Air Quality Monitoring Summary

Air Pollutant, Location	Averaging Time	Item	2008	2009	2010
Fine particulate matter ($PM_{2.5}$)	Annual	Annual Average (µg/m^3)	13.3	12.9	11.1
	24 Hour	24 Hour (µg/m^3)	43.5	37.8	39.3
		Days > National Standard (35 µg/m^3)	10	6	6

Abbreviations:
> = exceed ppm = parts per million µg/m^3 = micrograms per cubic meter
ID = insufficient data ND = no data max = maximum
State Standard = California Ambient Air Quality Standard
National Standard = National Ambient Air Quality Standard
Ozone and PM_{10} are from Redlands, CO, nitrogen dioxide and $PM_{2.5}$ are from San Bernardino, sulfur dioxide is from Fontana.
Sources: Michael Brandman Associates 2011.

Toxic Air Contaminants

A toxic air contaminant or TAC is defined as an air pollutant which may cause or contribute to an increase in mortality or serious illness, or which may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air. However, their high toxicity or health risk may pose a threat to public health even at very low concentrations. For those TACs that may cause cancer, there is no concentration that does not present some risk. In other words, there is no threshold level below which adverse health impacts are not expected to occur. This contrasts with the criteria pollutants for which acceptable levels of exposure can be determined and for which the State and federal governments have set ambient air quality standards. The majority of the estimated health risk from TACs can be attributed to a relatively few compounds, the most important being particulate matter from diesel-fueled engines (DPM). In addition to DPM, benzene and 1,3-butadiene are also significant contributors to overall ambient public health risk in California.

Both SCAQMD and ARB have monitoring networks in the Basin that measure ambient concentrations of certain TACs that are associated with important health-related effects and are present in appreciable concentrations in the Basin. The SCAQMD uses this information to determine health risks for a particular area. The ARB publishes annual statewide, Basin, and location-specific summaries of the concentration levels of several TACs and their resulting cancer risks[1]. The most recent summary is the ARB Air Quality Almanac for 2009. The Almanac presents the relevant concentration and cancer risk data for the ten TACs that pose the most substantial health risk in California based on available data. These TACs are: acetaldehyde, benzene, 1,3-butadiene, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, perchloroethylene, and DPM. DPM is not directly measured but is indirectly estimated based on fine particulate matter measurements and special studies on the chemical speciation of ambient data along

[1] Cancer risk is expressed as a probability of an individual out of a population of one million contracting cancer via a continuous exposure to TACs over a 70-year lifetime.

with receptor modeling techniques. The ARB estimates that 78 percent of the known statewide cancer risk is attributable to DPM.

Estimates of cancer risk statewide have shown a steady decline from the early 1990s when the cancer risk including diesel PM was estimated to be 1,696 in one million. By the year 2000, the cancer risk was estimated to be 1,005 in one million or a reduction of 41 percent. Reductions in cancer risk are expected to continue into the future as new emission controls are implemented that further reduce diesel PM emissions, the major component of the total cancer risk. The cancer risks attributable to the non-DPM chemicals (i.e., the nine TACs measured by the ARB described above) have also shown significant reductions at the SCAQMD Rubidoux monitoring location declining from an estimated cancer risk of 429 in one million in 1990 to 129 in one million in 2006, a reduction of 70 percent. The Rubidoux monitoring station is located about 14 miles southwest of the Project site.

In addition to the measurements presented in the ARB almanac, the SCAQMD conducted a detailed TAC emission inventory, air sampling, and dispersion modeling study called the Multiple Air Toxics Exposure Study in the Basin (MATES-II) and MATES-III. The MATES Studies provided information on the importance of various TACs in terms of their relative health risks as well as their spatial distribution across the Basin. The MATES-III information can be used to characterize the "background" health risks from both regional and local TAC emission sources. The MATES-III program results indicate that the cancer risks in the area where the Project site is located are estimated to be in the range of 700 in one million of which the DPM contributes approximately 84 percent of the total cancer risk. The MATES III found that the population weighted cancer risk in the Basin in total was 853 in one million.

Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill, the chronically ill, especially those with cardio-respiratory diseases. Residential areas are also considered sensitive to air pollution because residents (including children and the elderly) tend to be home for extended periods, resulting in sustained exposure to air pollutants present. For purposes of the California Environmental Quality Act (CEQA), the SCAQMD considers a sensitive receptor to be a location where a sensitive individual could remain for 24-hours, such as residences, hospitals, or convalescent facilities (South Coast Air Quality Management District 1993 and 2008, page 3-2). Commercial and industrial facilities are not included in the definition because employees do not typically remain onsite for 24-hours. However, when assessing the impact of pollutants with 1-hour or 8-hour standards (such as nitrogen dioxide and carbon monoxide), commercial and/or industrial facilities would be considered sensitive receptors for those purposes.

The closest existing sensitive receptors are residences located approximately 25 meters (82 feet) to the east and southeast of the Project across Karon Street. A review of the City of Redlands General Plan (City of Redlands 1995) indicates that the areas to the north, south, and west of the Project site

have been designated as commercial and, therefore, would not involve the future location of sensitive receptors in these areas. The closest schools are the Lugonia School located 0.8 mile east of the Project, Clement Middle School located 1.0 mile east of the Project, and the Packinghouse Christian Academy located 0.6 mile west of the Project.

3.3.4 - Thresholds of Significance

According to the CEQA Guidelines' Appendix G Environmental Checklist, to determine whether impacts to air quality are significant environmental effects, the following questions are analyzed and evaluated. Would the Project:

a) Conflict with or obstruct implementation of the applicable air quality plan?

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

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

d) Expose sensitive receptors to substantial pollutant concentrations?

e) Create objectionable odors affecting a substantial number of people?

CEQA guidelines define a significant effect on the environment as "a substantial, or potentially substantial, adverse change in the environment." To determine if a Project would have a significant impact on air quality, the type, level, and impact of emissions generated by the Project must be evaluated.

To assist in the establishment of a quantitative determination of what is considered "significant," the SCAQMD has published a number of significance thresholds that apply to new projects constructed or operated within the SCAQMD. The SCAQMD recommends that lead agencies apply these thresholds in determining whether a Project would result in a significant air quality impact. If the lead agency finds that a Project has the potential to exceed these air pollution thresholds, the Project would be considered significant. These thresholds have been defined by SCAQMD for the Basin based on scientific data the SCAQMD has obtained and factual data within the federal and State Clean Air Acts. Since the Project is located within the Basin, these thresholds are applicable to this Project. These thresholds are discussed in the Impact sections below and are summarized in Table 3.3-4.

Table 3.3-4: Summary of Significance Thresholds

Regional Emission Thresholds		
Pollutant	**Construction (pounds per day)**	**Operation (pounds per day)**
Oxides of Nitrogen (NO_x)	100	55
Reactive Organic Gases (VOC)	75	55
Particulate Matter (PM_{10})	150	150
Particulate Matter ($PM_{2.5}$)	55	55
Oxides of Sulfur (SO_x)	150	150
Carbon Monoxide (CO)	550	550
Localized Significance Thresholds for Criteria Pollutants		
Pollutant	**Averaging Time**	**Significance Threshold**
Nitrogen Dioxide (NO_2)	1-hour	338 $\mu g/m^3$
Carbon Monoxide (CO)	1-hour 8 hour	23,000 $\mu g/m^3$ 10,000 $\mu g/m^3$
PM_{10} – Construction PM_{10} – Operations PM_{10} – Operations	24-hours 24-hours Annual	10.4 $\mu g/m^3$ 2.5 $\mu g/m^3$ 1.0 $\mu g/m^3$
$PM_{2.5}$ – Construction $PM_{2.5}$ - Operations	24-hours 24-hours	10.4 $\mu g/m^3$ 2.5 $\mu g/m^3$
CO Hot Spot Thresholds		
Carbon Monoxide (CO)	1-hour 8 hour	23,000 $\mu g/m^3$ 10,000 $\mu g/m^3$
Health Risks for Toxic Air Contaminants		
Cancer Risk	70-year average (sensitive receptors)	Maximum Incremental Cancer Risk 10 in 1 million
Non-Cancer Risk	Hazard Index	1.0 (project increment)
Source: SCAQMD 2011 SCAQMD Air Quality Significance Thresholds		

3.3.5 - Project Impacts and Mitigation Measures

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

Air Quality Plan

Impact AQ-1:	**Conflict with or obstruct implementation of the applicable air quality plan? [CEQA Air Quality Threshold a]**

Impact Analysis

An AQMP describes air pollution control strategies to be taken by a city, county, or region classified as a non-attainment area. The 2007 AQMP prepared by the SCAQMD is designed to satisfy the State Implementation Plan submittal requirements of the federal Clean Air Act to demonstrate attainment of the new federal 8-hour ozone and $PM_{2.5}$ ambient air quality standards, the California Clean Air Act triennial update requirements, and fulfill the SCAQMD's commitment to update transportation emission budgets based on the latest approved motor vehicle emissions model and planning assumptions. CEQA requires that certain proposed projects be analyzed for consistency with the AQMP.

According to the 1993 SCAQMD Handbook (pages 12-2 and 12-3), there are two key indicators of consistency with the AQMP:

1. Indicator: Whether the project will not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP. Project applicability: applicable and assessed below in criterion 1.
2. Indicator: A project would conflict with the AQMP if it will exceed the assumptions in the AQMP in 2010 or increments based on the year of project build-out and phase. The Handbook indicates that key assumptions to use in this analysis are population number and location and a regional housing needs assessment. The parcel-based land use and growth assumptions and inputs used in the Regional Transportation Model run by the Southern California Association of Governments that generated the mobile inventory used by the SCAQMD for AQMP are not available and it is unknown if the land uses in city/county general plans are used in the projections. Nevertheless, a discussion in this regard is included in this analysis as criterion 3.

Consistency with the AQMP will also be determined based on if the Project complies with applicable control measures, rules, and regulations, as discussed in criterion 2 below.

Criterion 1: Project's Contribution to Localized Air Quality Violations

According to the SCAQMD, the Project is consistent with the AQMP if the Project would not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP (South Coast Air Quality Management District 1993, page 12-3).

Impact AQ-2 demonstrated (see below) that during construction the Project could violate an air quality standard or contribute substantially to an existing or projected air quality violation for nitrogen dioxide. Therefore, without mitigation, the Project results in a potentially significant impact.

During operation, localized onsite concentrations and impacts at Project impacted intersections are less than significant.

Criterion 2: Control Measures

The second indicator of whether the Project could conflict with or obstruct implementation of the air quality plan is by assessing the Project's compliance with the control measures in the 2003 and the 2007 AQMPs.

The 2003 AQMP contains a number of land use and transportation control measures including the following: the District's Stationary and Mobile Source Control Measures; State Control Measures proposed by ARB; and Transportation Control Measures provided by Southern California Association of Governments. ARB's strategy for reducing mobile source emissions include the following approaches: new engine standards; reduce emissions from in-use fleet, require clean fuels, support alternative fuels and reduce petroleum dependency, work with EPA to reduce emissions from national and state sources, and pursue long-term advanced technology measures (AQMP 2003, page 4-25). Transportation control measures provided by Southern California Association of Governments include those contained in the Regional Transportation Plans, the most current version of which is the 2008 Regional Transportation Plan. The Regional Transportation Plan has control measures to reduce emissions from on-road sources by incorporating strategies such as high occupancy vehicle interventions, transit, and information-based technology interventions (AQMP 2003, page 4-19). The Project indirectly would comply with the control measures set by ARB and Southern California Association of Governments.

The focus of the 2007 AQMP is to demonstrate attainment of the federal $PM_{2.5}$ ambient air quality standard by 2015 and the federal 8-hour ozone standard by 2024, while making expeditious progress toward attainment of state standards. The proposed strategy, however, does not attain the previous federal 1-hour ozone standard by 2010 as previously required prior to the recent change in federal regulations. This is to be accomplished by building upon improvements from the previous plans and incorporating all feasible control measures while balancing costs and socioeconomic impacts. The 2007 AQMP indicates that $PM_{2.5}$ is formed mainly by secondary reactions or sources. Therefore, instead of reducing fugitive dust, the strategy for reducing $PM_{2.5}$ focuses on reducing precursor emissions of SO_x, directly emitted $PM_{2.5}$, NO_x, and VOC.

The Final 2007 AQMP control measures consist of four components. These components are discussed Impact AQ-1 in the Air Quality and Greenhouse Gas Analysis Report (around page 70). The Project is consistent with the components.

Geographical areas in the state that exceed the federal air quality standards are called nonattainment areas. The Project area is in nonattainment for ozone, PM10, PM2.5, and nitrogen dioxide. State Implementation Plans (SIPs) show how each area will attain the federal standards. To do this, the SIPs identify the amount of pollutant emissions that must be reduced in each area to meet the standard and the emission controls needed to reduce the necessary emissions. On September 27, 2007, ARB adopted its State Strategy for the 2007 SIP. In 2009, the SIP was revised to account for emissions reductions from regulations adopted in 2007 and 2008 and clarifies ARB's legal commitment. There are currently proposed revisions and a 2011 Progress Report. The South Coast is currently 94 percent of the way towards achieving the 2014 emissions levels identified in its PM2.5 SIP. The SIP takes into account ARB rules and regulations. The Project will comply with applicable rules and regulations.

The Project would comply with all applicable rules and regulations. Therefore, the Project complies with this criterion.

Criterion 3: Land Use

According to Chapter 12 of the SCAQMD, CEQA, Air Quality Handbook, the purpose of the consistency finding is to determine whether a project is inconsistent with the assumptions and objectives of the regional air quality plans, and thus whether it would interfere with the region's ability to comply with federal and State air quality standards. If a project is inconsistent, local governments need to consider project modifications or inclusion of mitigation to eliminate the inconsistency. Consistency with the AQMP implies that a project is consistent with the goals, objectives, and assumptions in the respective plan to achieve the national and State air quality standards. To assess the environmental impacts of new or renovated developments accurately, environmental pollution and population growth are projected for future scenarios.

Since the AQMP could be based on local general plans, projects that are deemed consistent with the general plan are found to be consistent with the AQMP. The City of Redlands General Plan has designated the Project area as "commercial" to accommodate business growth in the Project vicinity. Since the Project's intended land use is consistent with the current General Plan, implementation of the Project would not require any amendments to the City's zoning designations for the Project site. Therefore, the Project would be within the City's General Plan designation and is consistent with the adopted SCAQMD AQMP according to this criterion.

Level of Significance Before Mitigation

Potentially significant.

Mitigation Measures

MM AQ-1 During construction, one of the following scenarios shall be applied:

- A maximum of 15,700 horsepower hours per day for the off-road equipment shall be used and the off-road equipment shall have Tier 2 engines or higher.

- A maximum of 12,100 horsepower hours per day for the off-road equipment shall be used.

MM AQ-2 During construction, paving shall not occur during the building or grading phases. Paving can occur during architectural coating (painting).

Level of Significance Before Mitigation

Less than significant. As shown in Impact AQ-2, implementation of mitigation measures AQ-1 and AQ-2 would reduce localized impacts of nitrogen dioxide to less than significant. The measures reduce daily emissions of NOx thereby reducing the Project's localized contribution to air quality violations to less than significant.

Project's Contribution to Air Quality Violations

Impact AQ-2	**Violate an air quality standard or contribute substantially to an existing or projected air quality violation?** **[CEQA Air Quality Threshold b]**

Impact Analysis

The potential for violation of ambient air quality standards was judged based on three criteria:

- Criterion 1: the localized significance analysis for the Project's construction
- Criterion 2: the localized significance analysis for the Project's operational emissions; and
- Criterion 3: the CO hotspot assessment for operational emissions.

Localized Analysis Methodology

The localized analysis assesses the impact of onsite Project emissions to sensitive receptors located within the vicinity of the Project. The SCAQMD, in its Localized Significance Threshold Methodology indicates that only onsite emissions are included in the localized analysis. In order to estimate the impact to sensitive receptors, the future concentration of pollutants must be calculated at the location of the sensitive receptors and compared with a standard or threshold. The onsite emissions are input into an air dispersion model, the U.S. EPA AERMOD Model, to simulate the transport and dispersion of Project-related emissions released from onsite construction and operational activities. These impacts were then compared to the applicable SCAQMD localized concentration thresholds and ambient air quality standards to assess the regulatory significance of these impacts.

Note that the SCAQMD's localized methodology only applies to nitrogen dioxide, CO, PM_{10}, and $PM_{2.5}$. Ozone and VOC are not included because it is not a localized pollutant and modeling for ozone is complex and speculative to occur at the Project level; ozone is addressed under the regional analysis (see Impact AQ-3). Sulfur dioxide, sulfates, visibility reducing particles, and hydrogen sulfide are not modeled because the Basin is in attainment for those pollutants and the Project would

not emit those pollutants in sufficient quantity (background concentrations are low). Diesel particulate matter and benzene are assessed in Impact AQ-4.

Criterion 1: Localized Significance Analysis - Construction

Localized construction emissions were estimated using the SCAQMD-recommended model, CalEEMod. Short-term construction impacts would include fugitive dust and other particulate matter generated during earthmoving activities and exhaust emissions from earthmoving, building construction, and paving equipment. Construction activities cause various types of air emissions consisting principally of criteria pollutant exhaust emissions (NO_x, SO_x, CO, VOC, PM_{10}, and $PM_{2.5}$) from heavy-duty construction equipment and fugitive dust (mainly PM_{10}) from disturbed soil. Construction-related activities include the following:

- Grading/clearing for the Project site and the detention areas;
- Building construction;
- Asphalt paving of roads and parking lots throughout the development; and
- Application of architectural coatings on surfaces such as exterior walls and interior painting.

Construction equipment such as cranes, bulldozers, scrapers, forklifts, backhoes, and water trucks are expected to be used on the Project site and would result in exhaust emissions. During the finishing phase, paving operations and application of architectural coatings would release VOC emissions. In accordance with the SCAQMD methodology, only emissions of NO_x, CO, PM_{10}, and $PM_{2.5}$ generated from onsite construction activities are included in the assessment.

Emissions were estimated using the California Emissions Estimator Model Version 2011.1.1 (CalEEMod), which was released March 22, 2011.

It was assumed that construction would occur in the year 2012 and would last approximately one year. This is based on the buildout date assumption of 2013. The duration of construction is shown in Table 3.3-5. As shown in the table, the Project would have an expedited construction schedule compared with the defaults.

Table 3.3-5: Construction Duration

Phase	Duration (days)	
	CalEEMod Default	Project
Grading – main site	105	40
Grading – outparcels	—	10
Building	740	210
Paving of parking lots and roads	20	20
Coating	55	55
Total	—	260*

Table 3.3-5 (cont.): Construction Duration

Phase	Duration (days)	
	CalEEMod Default	Project

Notes:
* For the unmitigated scenario, it is assumed that building, paving, and coating would overlap; therefore, the total days is not the sum of the days.
Source: CalEEMod and Michael Brandman Associates

There would be 10 smaller buildings that would range between 3,000 and 12,300 square feet and the Walmart building at 215,000 square feet. As shown in Table 3.3-5, building construction would only take 28 percent of the time and grading would only take 38 percent of the time compared with the CalEEMod default. The CalEEMod default construction equipment list is based on survey data based on the size of the sites (i.e., there is data for a 34 acre site). To account for the shortened phases, the following equipment were added to the default assumptions:

- Grading of main site: +1 rubber tired dozer, +2 tractors
- Building: +2 welders, +3 generator sets, +1 crane

The construction equipment list used for the unmitigated scenario is shown in Table 3.3-6.

Table 3.3-6: Construction Equipment Assumptions (Unmitigated)

Phase	Equipment	Number	Hours per day	Horsepower	Load Factor
Grading of main site	Excavators	2	8	157	0.57
	Graders	1	8	162	0.61
	Rubber Tired Dozers	3	8	358	0.59
	Scrapers	2	8	356	0.72
	Tractors/Loaders/Backhoes	4	8	75	0.55
Grading of outparcels and detention basins	Excavators	1	8	157	0.57
	Graders	1	8	162	0.61
	Rubber Tired Dozers	1	8	358	0.59
	Scrapers	1	8	356	0.72
	Tractors/Loaders/Backhoes	2	8	75	0.55
Paving of parking lots and roads, road striping	Pavers	2	8	89	0.62
	Paving Equipment	2	8	82	0.53
	Rollers	2	8	84	0.56

Table 3.3-6 (cont.): Construction Equipment Assumptions (Unmitigated)

Phase	Equipment	Number	Hours per day	Horsepower	Load Factor
Building Construction (including bus station)	Cranes	2	7	208	0.43
	Forklifts	3	8	149	0.3
	Generator Sets	4	8	84	0.74
	Tractors/Loaders/Backhoes	3	7	75	0.55
	Welders	3	8	46	0.45
Architectural Coating	Air Compressors	1	6	78	0.48
Source: Michael Brandman Associates 2011					

Paving. VOC emissions from paving is based on a total of 26.45 acres. This includes 17.35 acres of parking lots (from the site plan) and 9.1 acres of roads (San Bernardino Avenue 122 feet by 1,200 feet; Tennessee Street 88 feet by 1,200 feet; Pennsylvania Avenue 48 feet by 1,350 feet; New York Avenue 66 feet by 1,200 feet – values are approximate). The addition of the mitigation measures requiring roadway improvements may increase the days paving and related activities take place. However, since the air quality analysis is based on the daily emissions, these traffic related mitigation measures would not change the significance findings for the air quality analysis. The greenhouse gas analysis is based on the annual emissions; however, this increase is accounted for in the baseline emissions and is not substantial.

Grading. The quantity of fugitive dust estimated by CalEEMod is based on the number of equipment used during grading. Tractors, graders, and dozers would impact 0.5 acres per 8-hour day and scrapers would impact 1 acre per 8-hour day. Excavators are not listed; however, for this analysis, it is assumed that they would impact 0.5 acres per day as well. Therefore, considering the equipment assumed during grading, there would be 7 acres disturbed per day on the main site and 3.5 acres per day on Parcel 11. This analysis assumes that grading of the main site would last for 40 days; therefore, there would be 280 total acres disturbed during the phase (7 acres x 40 days). During grading of Parcel 11, there would be 35 total acres disturbed (3.5 acres x 10 days). The digging of the detention pond is included in the overall grading emissions from the use of onsite offroad equipment. It is assumed for purposes of this analysis that there would be no import or export of soil.

SCAQMD Rule 403 requires fugitive dust generating activities follow best available control measures to reduce emissions of fugitive dust. These measures are accounted for in CalEEMod as mitigation because the model categorizes the measures as mitigation, even though they are technically not mitigation. The best available control measures and the associated measure in CalEEMod are displayed in Table 3.3-7.

Table 3.3-7: Best Available Control Measures

Best Available Control Measure	Associated Measure in CalEEMod
Clearing and Grubbing 02-1 Maintain stability of soil through pre-watering of site prior to clearing and grubbing. 02-2 Stabilize soil during clearing and grubbing activities. 02-3 Stabilize soil immediately after clearing and grubbing activities. **Earth Moving Activities** 08-1 Pre-apply water to depth of proposed cuts 08-2 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 08-3 Stabilize soils once earth-moving activities are complete	Water exposed surfaces three times per day
Import/Export of Bulk Materials 09-1 Stabilize material while loading to reduce fugitive dust emissions. 09-2 Maintain at least six inches of freeboard on haul vehicles. 09-3 Stabilize material while transporting to reduce fugitive dust emissions. 09-4 Stabilize material while unloading to reduce fugitive dust emissions. 09-5 Comply with Vehicle Code Section 23114.	Water exposed surfaces three times per day
Landscaping 10-1 Stabilize soils, materials, slopes Guidance: Apply water to materials to stabilize; maintain materials in a crusted condition; maintain effective cover over materials; stabilize sloping surfaces using soil until vegetation or ground cover can effectively stabilize the slopes; hydroseed prior to rain season.	Replace ground cover in disturbed areas when unused for more than 10 days (assumes a 5 percent reduction for this measure pursuant to reference: South Coast Air Quality Management District 2007c)
Staging Areas 13-1 Stabilize staging areas during use by limiting vehicle speeds to 15 miles per hour.	Reduce speed on unpaved roads to 15 miles per hour.
Traffic Areas for Construction Activities 15-1 Stabilize all off-road traffic and parking areas. 15-2 Stabilize all haul routes. 15-3 Direct construction traffic over established haul routes. Guidance: Apply gravel/paving to all haul routes as soon as possible to all future roadway areas; barriers can be used to ensure vehicles are only used on established parking areas/haul routes.	Water exposed surfaces three times per day
Source: Michael Brandman Associates 2011.	

The construction emissions for the localized assessment were extracted from the CalEEMod model considering only emissions generated from onsite construction activities such as from construction equipment exhaust (off-road diesel) and fugitive dust from earth-moving activities. A review of the

CalEEMod model outputs indicated that the highest emissions generated from onsite construction activities are associated with the mass grading activities of the Project site. Therefore, grading emissions during this construction activity were evaluated in the localized assessment. The maximum daily grading emissions are provided in Table 3.3-8.

Table 3.3-8: Maximum Daily Onsite Construction Emissions

Construction Activity	Emissions (pounds/day)			
	NO_x	CO	PM_{10}	$PM_{2.5}$
Mass Grading	158	85	17	11
Source: Michael Brandman Associates 2011.				

The modeling assessment used the meteorological data for the year 2007 as provided by the SCAQMD for their Redlands monitoring station, which is located 2.5 miles southeast of the Project site[2]. A construction area of 10.5 acres was assumed based on the extent of the area that could be disturbed in a day as derived from the CalEEMod model, which considers the amount of work that construction equipment can accomplish in a day. Two construction emission sources were evaluated:

- Onsite construction equipment exhaust emissions were represented by an area source distributed over the 10.5-acre construction area with a release height of five meters (16.5 feet); and
- An area source with a size of 10.5 acres and a ground-level release height was used to represent the onsite emissions of fugitive dust.

The two onsite construction emission sources were located along the southeastern corner of the Project property line across from the closest residences along Karon Street. Construction was assumed to occur over an 8-hour day on weekdays.

It should be noted that nitrogen dioxide present in the atmosphere is formed from two sources. One source is the direct emission of nitrogen dioxide from the combustion of fuel. The second source involves the formation of nitrogen dioxide in the atmosphere due to reactions of oxides of nitrogen emissions and ambient concentrations of ozone and reactive hydrocarbons. The concentrations of nitrogen dioxide increases as the distance from the emission source increases, but only to a certain point, since dispersion dilutes the concentrations. The Ozone Limiting Method (OLM) was used in the AERMOD model to convert the NO_X emissions to nitrogen dioxide based on the distance from the source to the receptor and background ozone concentrations.

[2] The year 2007 is the only year with valid meteorological data provided by the SCAQMD for the Redlands monitoring station.

Table 3.3-9 provides a comparison of the Project's localized construction impacts with the SCAQMD's significance thresholds without mitigation. Note that the impact estimates for PM_{10} and $PM_{2.5}$ include compliance with SCAQMD Rule 403 regarding fugitive dust as discussed previously. The highest impacts were generally noted along the southeast corner of the Project's fence line along Pennsylvania Avenue. Concentrations from the Project during construction would exceed the SCAQMD's localized construction significance threshold for NO_2 but not exceed the significance thresholds for CO, PM_{10}, and $PM_{2.5}$. As a result, the Project would result in a significant localized air quality impact during construction.

Table 3.3-9: Localized Construction Impacts - Construction

Air Pollutant	Averaging Time, Units	Local Project Impact	Background Air Quality	Total	Standard/ Threshold	Significant Impact?
Carbon monoxide (CO)	1-hour, ppm	0.7	3	3.7	20.0	No
	8-hour, ppm	0.1	2.2	2.3	9.0	No
Nitrogen dioxide (NO_2)	1-hour, ppm	0.114	0.091	0.205	0.18	Yes
Particulate matter (PM_{10})	24-hour, $\mu g/m^3$	10.2	NA	10.2	10.4	No
	Annual, $\mu g/m^3$	0.7	NA	0.7	1.0	No
Particulate matter ($PM_{2.5}$)	24-hour, $\mu g/m^3$	8.6	NA	8.6	10.4	No

Notes:
NA = Not Applicable; background levels are not defined for PM_{10} and $PM_{2.5}$ for purposes of significance testing
ppm = parts per million (a unit of concentration); $\mu g/m^3$ = micrograms per cubic meter (a unit of concentration)
Source: Michael Brandman Associates 2011.

Criteria 2: Localized Significance Analysis - Operation

Operational or long-term emissions occur over the life of the Project. The assessment of local operational impacts was accomplished for three scenario years:

- Scenario 2010 representing an existing condition in accordance with the Project's traffic impact study (Urban Crossroads 2011); although the Project would not be operational it is assumed for purposes of this analysis that the Project would be operational
- Scenario 2013 representing the expected build out year when the Project would commence operations
- Scenario 2030 representing a long-term future Horizon Year

Note that the Project impacts during the above three scenario years result from the changes in emissions that occur over time associated with the various Project emission sources such as motor vehicles and transport refrigeration units. These emission changes occur as a result of future vehicle

turnover to newer and cleaner vehicle models and the implementation of regulatory mandated emission control technologies. The aforementioned Project impacts are incremental in nature and result from the changes in Project emissions.

The predominant sources of onsite operational emissions are the motor vehicles and trucks that access the Project site. Such emissions result from the delivery truck traffic that arrives, unloads, and departs daily from the various Project buildings and from the daily customer and worker traffic accessing the Project's parking lots. Additional operational emissions also arise from the combustion of natural gas for heating, landscape emissions, operation of the gasoline service station, and from the use of consumer products. In this assessment, four main emission sources were evaluated as to their localized operational impacts on air quality.

- Delivery truck exhaust emissions from traffic that would move onto the Project site from the entrances along San Bernardino Avenue, Tennessee Street, and the future Pennsylvania Avenue;
- Truck idling emissions at loading docks;
- Emissions associated with the use of TRUs, which are used in the transport of perishable food items; and
- Automobile traffic from workers and customers while traveling and idling within the parking lots

The estimation of the onsite mobile source emissions requires the specification of several key pieces of information including the number of vehicle trips by vehicle type, trip travel lengths, vehicle idling time, and emission factors that define the amount of emissions as a function of vehicle speed and distance traveled or amount of idling time per vehicle.

Pollutant emissions from the various onsite mobile sources were calculated using information derived from the Project description, Project traffic study, truck delivery information for Walmart operations, and mobile source emission factors from the ARB EMFAC2007 emissions factor model. Vehicle trip distances were determined from the Project's site plan as the distance from the nearest Project entrance to the various Project buildings. The emission factors for the Project's mobile source operational emissions were based on the fleet years 2010, 2013, and 2030. Vehicle travel speeds while traveling onsite were assumed to be 10 miles per hour (mph) for both trucks and customer vehicles. Delivery trucks were assumed to idle for 15 minutes per day at the building loading areas pursuant to guidance from the SCAQMD while customer vehicles were assumed to idle for 1 minute per day while in the parking lots.

The number of delivery trucks was estimated from the type of retail/commercial operation and information available from similar Walmart projects and from similar retail/commercial projects. The number of delivery truck trips is provided in Table 3.3-10 and Table 3.3-11.

Table 3.3-10: Estimated Daily Delivery Truck Trips

Project Building	Vehicle Class[1]	Delivery Trucks Trips (one way trips per day)
Parcel 1	4+ axle 4+ Axle (with TRU)	2 2
Parcel 2	4+ axle (with TRU)	2
Parcel 3	2 axle	2
Parcel 4	2 axle	2
Parcel 5	4+ axle (TRU)	4
Parcel 6	2 axle	2
Parcel 7	4+ axle (with TRU)	2
Parcel 8	4+ axle (with TRU)	2
Parcel 9	4+ axle (with TRU)	2
Parcel 10 - Walmart	4+ axle (without TRU) 4+ axle (with TRU) 2 axle	10 4 14
Total	—	50

Notes:
(1) 2 axle vehicles are represented by the EMFAC light heavy duty 2 vehicle class; 4+ axle vehicles are represented by the EMFAC heavy-heavy duty vehicle class; all vehicles are assumed to be diesel-fueled
TRU = transport refrigeration unit
Source: Michael Brandman Associates 2011.

Table 3.3-11: Truck Trip Summary

Vehicle Class	Category	One Way Trips per day	Percentage of Total (%)
2 axle	Light heavy duty truck (LHDT2)	20	40
4+ axle	Heavy-heavy duty trucks (HHDT)	30	60

Source: Summarized from table above

The average trip distance for the Walmart delivery trucks was assumed to be 20 miles as the distance to the nearest Walmart distribution centers in Mira Loma and Fontana, California.

The percentages of worker and customer trips are from CalEEMod defaults. The trip generation rates are from the Project's Traffic Impact Analysis (Urban Crossroads 2011) and are shown in Table 3.3-12.

Table 3.3-12: Trip Generation Rates

Land Use	Quantity	Units	Trip Generation Rate (trips/unit/day)		
			Weekday	Saturday	Sunday
Free standing discount superstore	215.0	TSF	53.13	64.07	56.12
Specialty retail	25.7	TSF	44.32	42.04	20.43
High-turnover sit down restaurant	9.0	TSF	127.15	158.37	131.84
Fast food without drive through	12.3	TSF	716.00	696.00	556.80
Fast food with drive through	10.5	TSF	496.12	722.03	542.72
Gas/service station with market and car wash	12	VFP	152.84	210.99	168.79
Total	272.5 12	TSF VFP	—	—	—

Notes:
TSF = thousand square feet; VFP = vehicle fueling positions
Source: Urban Crossroads 2011.

The Traffic Impact Analysis assumed that there would be an internal capture of 10 percent for all uses. Internal capture is a percent reduction attributed to trips internal to the site; trips may be made between individual retail uses onsite and can be made either by walking or using internal roadways without using external streets.

Pass-by trips are intermediate stops on the way from an origin to a primary destination without a route diversion. Pass-by trips are attracted from passing the site on an adjacent street or roadway that offers direct access to the generator. The high-turn over sit down restaurant and the fast food restaurant(s) without a drive-through would have a pass-by reduction of 43 percent. The fast food restaurant(s) with a drive-through would have a pass-by reduction of 50 percent. The gas station would have a pass-by reduction of 56 percent.

CalEEMod assumes that "primary" trips travel 100 percent of the trip distance; "diverted" trips travel 25 percent of the trip length; and pass-by trips are 0.1 miles in length. Therefore, it is assumed for these purposes that the internal capture and pass-by trips are 0.1 miles in length (and are attributed in CalEEMod as pass-by trips). There are zero diverted trips and the rest of the percentage are primary trips.

The percentages for customer, worker, and other trips are from the CalEEMod defaults.

The vehicle mix for customer and worker trips is shown in Table 3.3-13, as derived from the URBEMIS2007 model for the year 2013. Light-heavy duty trucks (1 and 2), medium duty trucks, and heavy-heavy duty trucks are taken out of the mix, as they are accounted for in the delivery truck mix.

Table 3.3-13: Vehicle Mix for Customer/Worker Trips

Vehicle Class	Vehicle Mix (%)
Light duty automobile (LDA)	53.3
Light duty truck (LDT1)	7.6
Light duty truck (LDT2)	24.0
Medium duty truck (MDT)	11.1
Urban bus (UB)	0.1
Motorcycle (MC)	2.9
Motor home (MH)	1.0
Source: Michael Brandman Associates 2011.	

The trip lengths for the customer base are derived from the trade area in the Urban Decay Analysis prepared by the Natelson Dale Group. The trade area for the grocery components of the Project is 5 miles, based on Figure I-1 in the Urban Decay Analysis. The trade area for the non-grocery components of the Project includes the primary market area and the secondary market area (Figure I-2 in the Urban Decay Analysis) and is assumed to be 8.3 miles (the average of the distances to the edges of the east and west secondary market areas: 4, 4, 12, 12, 6, 4, 12, and 12 miles). The grocery sales and support component of Walmart is 43,809 square feet, 16 percent of the total square feet in the Project (272,500 square feet). Therefore, a weighted average of the two is 7.8 miles, which is used for the customer trips. The trip length for the worker trips is 9.5 miles, from CalEEMod. The non-work trips is 7.8 miles (increased from the CalEEMod default of 7.3). A summary of the trip lengths is as follows:

Customer and Other: 7.8 miles per trip
Workers: 9.5 miles per trip

Each delivery truck will idle not more than 15 minutes per day while loading/unloading at the building loading docks. The SCAQMD in its comment letters recommends a 15-minute truck idling assumption (5 minutes while arriving at the loading dock, 5 minutes unloading/loading, and 5 minutes waiting to depart). This is a very conservative assumption, as California law has a 5-minute idling restriction. In addition, Walmart has an automatic shutoff on its heavy-duty trucks, which limits idling to 3 minutes.

Another conservative assumption in this analysis is that the vehicle age applied the default truck distribution contained in the EMFAC mobile source emission model that includes a fleet of trucks spanning a 25-year time frame (i.e., a mix of vehicles from 1988 to 2013).

Delivery truck traffic was assumed to access the Project site from three main driveways:

1. From Tennessee Street;
2. From Pennsylvania Avenue; and
3. From San Bernardino Avenue.

Delivery trucks servicing the Walmart store were assumed to operate over a 24-hour day while the delivery trucks servicing the remaining parcels were assumed to operate over a 12-hour schedule.

Emissions are also associated with the customer and employee motor vehicles that would visit the various retail and commercial facilities as these vehicles travel and idle within the parking lots. The emission calculation for parking lot access was based on the number of vehicle trips expected to access the Project during a Saturday and also the Saturday peak traffic period. The parking lot usage assumed a 24-hour operation in keeping with the 24-hour operation of the large Walmart store.

Appendix B in the Air Quality and Greenhouse Gas Analysis Report provides a detailed tabulation of the criteria pollutant mobile source emission factors assumed in this assessment. The emission factors were derived from the ARB EMFAC2007 mobile source emission model as a function of fleet year, vehicle class (axle number), vehicle speed, and pollutant.

Small amounts of criteria pollutant emissions would also be released from the combustion of natural gas within the Project buildings for water and air heating. The natural gas emissions were estimated from CalEEMod and apportioned to each building according to building size.

Each of the emission source types described above also requires geometrical and emission release specifications for use in the air dispersion model. Exhibit 5 in the Air Quality and Greenhouse Gas Analysis Report provides the location of the various Project facilities and emission source locations. Table 3.3-14 provides a summary of the assumptions used to configure the various emissions. By way of explanation, the following definitions are used in defining the emission source geometrical configurations referred to in Table 3.3-14:

- Point source: a single identifiable local source of emissions; it is approximated in the AERMOD air dispersion model as a mathematical point in the modeling region with a location and emission characteristics such as height of release, temperature, etc. (Example: a stack or vent);
- Area source: a diffuse source of emissions released uniformly over a broad area (Example: a parking lot);

- Volume source: an area source with a third dimension (Example: construction area using off-road equipment with a height of release); and
- Line source: a series of volume sources along a path (Example: vehicular traffic along a street).

Table 3.3-14: Summary of Emission Source Configurations

Emission Source Type	Geometric Configuration	Relevant Assumptions
Onsite Diesel Truck Traffic	Line Sources	• See Table 3.3-11 for an inventory of truck operations • Stack release height: 4.1 meters (13.6 feet) • Vehicle Speed: 4.5 mps (10 mph) • Length of the line source (distance from the facility entrances on San Bernardino Ave, Tennessee Ave, Pennsylvania Ave to the loading docks of the respective facilities) • Vehicle types: heavy duty and light heavy duty diesel delivery trucks • Emission factor: ARB EMFAC2007
Onsite Diesel Truck Idling	Point Sources located at each facility	• Stack release height: 4.1 meters (13.6 feet) • Stack release characteristics > Stack diameter: 0.1 meter (0.3 feet) > Stack velocity: 51.9 mps (170 feet/sec) > Stack temperature: 366 °k (200° F) • Idle time: 15 minutes per truck per day • Vehicle type: heavy duty and light heavy duty diesel delivery trucks • Emission factor: ARB EMFAC2007
Onsite Diesel Truck TRU	Point Sources at each facility loading dock; emissions also include operation while traveling onsite	• Stack release height: 4.1 meters (13.6 feet) • TRU Size: 35 horsepower (typical size)
Parking Lots	Area Source, one per major facility	• Release height: 1 meter (3.3 feet) • Emission factors derived from EMFAC2007 at 10 mph onsite travel and 2 mph for idling (1 minute/per vehicle) • Vehicle trips based on Project traffic study
Gasoline Service Station	Point sources for loading and breathing loses; volume sources for refueling and spillage losses	• Emission factors and stack parameters derived from CAPCOA 1997 • Fuel throughput: 6.4 million gallons/year • Assumes 80% of emissions from 5 a.m. through 7 p.m. and 20% during the remainder of the day
Natural Gas	Point source	• Vent located 5 feet above the building top • Estimated from the URBEMIS model and apportioned according to building size
Retail/Commercial Facility Operations	All facilities	• 24/7 365 days/yr for Walmart store customer and worker vehicles and truck deliveries • 12-hour schedule 365 days per year for customer and worker vehicles and delivery trucks at other stores
Source: Michael Brandman Associates 2011		

The assessment also requires that a network of receptors be specified such that the impacts can be computed at the various locations within the network. Exhibit 6 in the Air Quality and Greenhouse Gas Analysis Report shows the various receptor locations. For purposes of this assessment, the following receptor network was used:

- Lines of receptors spaced 70 meters (230 feet) along the Project boundary line then spaced out to 500 (1,640 feet) meters in increments of 100 meters (330 feet);
- Receptors located at nearby sensitive receptors such as at residences immediately to the east of the Project

The assessment of air quality and health risk impacts from pollutant emissions from this Project applied the U.S. EPA AERMOD Model which is the air dispersion model accepted by the SCAQMD for performing air quality impact analyses. AERMOD predicts pollutant concentrations from point, area, volume, line, and flare sources with variable emissions in terrain from flat to complex with the inclusion of building downwash effects from buildings on pollutant dispersion. It captures the essential atmospheric physical processes and provides reasonable estimates over a wide range of meteorological conditions and modeling scenarios. The basic options used in the dispersion modeling are summarized in Table 3.3-15.

Table 3.3-15: General Modeling Assumptions

Feature	Option Selected
Terrain processing	Elevated terrain
Regulatory Dispersion Options	Default Assumptions Used
Land Use	Urban
Coordinate System	UTM
Building downwash	Included in Calculations
Meteorological Data	SCAQMD Redlands Meteorological Data for 2007 (only year of valid data from this location)
NO2 Assessment Methodology	Ozone Limiting Method using ozone data from the SCAQMD Redlands air monitoring station for 2007
Receptor height	0 meters
Source: Michael Brandman Associates 2011	

Account was taken of the effects of building downwash on the dispersion of emissions from the various sources located on the Project's property. Building downwash occurs when the aerodynamic turbulence, induced by nearby buildings, causes pollutants emitted from an elevated source to be mixed rapidly toward the ground (downwash). This results in potentially higher ground-level

concentrations than if the buildings were not present. The dispersion model contains algorithms to account for building downwash effects. The required information includes the location of the emission source, location of adjacent buildings, and the building geometry in terms of length, width, and height. For purposes of this analysis, the emission source and building locations were taken from the Project site plan. The building geometries assumed a building height of 10 meters (35 feet) for the Walmart store (Parcel 10) and the future buildings on Parcel 11 and 6 meters (20 feet) for all other buildings (Parcels 1 – 9).

Hourly meteorological data are also required to operate the AERMOD model to determine the direction and rate of dispersion of emissions released into the atmosphere. Meteorological data for use in the air dispersion model was obtained from the SCAQMD website for their Redlands Air Monitoring Station for the year 2007, the only period of valid data provided by the SCAQMD for performing air dispersion modeling assessments using the Redlands meteorological data.

Table 3.3-16, Table 3.3-17, and Table 3.3-18 provide the results of the Project's localized operational impacts along with a comparison to the SCAQMD's localized thresholds for NO_2 CO, PM_{10}, and $PM_{2.5}$ for the years 2010, 2013, and 2030, respectively. The residential receptors with the highest localized operational impacts were found to the east of the Project across Karon Street. The results contained in the tables indicates that operation of the Project would not exceed the SCAQMD's localized significance thresholds for any pollutant during any analysis year. Therefore, operation of the Project would not result in a significant localized air quality impact.

Table 3.3-16: Localized Operational Impacts - 2010

Air Pollutant	Averaging Time, Units	Local Project Impact	Background Air Quality	Total	Standard/ Threshold	Significant Impact?
Carbon monoxide (CO)	1-hour, ppm	0.1	3	3.1	20.0	No
	8-hour, ppm	0.06	2.2	2.3	9.0	No
Nitrogen dioxide (NO_2)	1-hour, ppm	0.012	0.091	0.103	0.18	No
	1-hour, ppm	0.010	0.07	0.08	0.10	No
Particulate matter (PM_{10})	24-hour, $\mu g/m^3$	0.23	NA	0.23	2.5	No
	Annual, $\mu g/m^3$	0.06	NA	0.06	1.0	No
Particulate matter ($PM_{2.5}$)	24-hour, $\mu g/m^3$	0.18	NA	0.18	2.5	No

Notes:
NA = Not Applicable; background levels are not defined for PM_{10} and $PM_{2.5}$ for purposes of significance testing
ppm = parts per million (a unit of concentration); $\mu g/m^3$ = micrograms per cubic meter (a unit of concentration)
Source: Michael Brandman Associates, 2011.

Table 3.3-17: Localized Operational Impacts – 2013

Air Pollutant	Averaging Time, Units	Local Project Impact	Background Air Quality	Total	Standard/ Threshold	Significant Impact?
Carbon monoxide (CO)	1-hour, ppm	0.08	3	3.1	20.0	No
	8-hour, ppm	0.04	2.2	2.2	9.0	No
Nitrogen dioxide (NO_2)	1-hour, ppm	0.011	0.091	0.102	0.18	No
	1-hour, ppm	0.010	0.07	0.08	0.10	No
Particulate matter (PM_{10})	24-hour, $\mu g/m^3$	0.28	NA	0.28	2.5	No
	Annual, $\mu g/m^3$	0.08	NA	0.08	1.0	No
Particulate matter ($PM_{2.5}$)	24-hour, $\mu g/m^3$	0.18	NA	0.18	2.5	No

Notes:
NA = Not Applicable; background levels are not defined for PM_{10} and $PM_{2.5}$
ppm = parts per million (a unit of concentration); $\mu g/m^3$ = micrograms per cubic meter (a unit of concentration)
Source: Michael Brandman Associates 2011.

Table 3.3-18: Localized Operational Impacts – 2030

Air Pollutant	Averaging Time, Units	Local Project Impact	Background Air Quality	Total	Standard/ Threshold	Significan t Impact?
Carbon monoxide (CO)	1-hour, ppm	0.04	3	3.0	20.0	No
	8-hour, ppm	0.02	2.2	2.2	9.0	No
Nitrogen dioxide (NO_2)	1-hour, ppm	0.009	0.091	0.100	0.18	No
	1-hour, ppm	0.007	0.07	0.077	0.10	No
Particulate matter (PM_{10})	24-hour, $\mu g/m^3$	0.25	NA	0.25	2.5	No
	Annual, $\mu g/m^3$	0.07	NA	0.07	1.0	No
Particulate matter ($PM_{2.5}$)	24-hour, $\mu g/m^3$	0.20	NA	0.20	2.5	No

Notes:
NA = Not Applicable; background levels are not defined for PM_{10} and $PM_{2.5}$ for purposes of significance testing
ppm = parts per million (a unit of concentration); $\mu g/m^3$ = micrograms per cubic meter (a unit of concentration)
Source: Michael Brandman Associates, 2011.

Criterion 2: CO Hot Spot Assessment

Within an urban setting, motor vehicle exhaust is the primary source of CO emissions. Consequently, the highest ambient CO concentrations are generally found within close proximity to congested intersection locations. A CO hotspot analysis is the appropriate tool to determine if emissions of CO from the operation of the Project would exceed federal or State ambient air quality standards for CO. During typical meteorological conditions, CO concentrations tend to decrease as the distance from the

emission source (congested intersection) increases. For purposes of providing a worst-case impact analysis, CO concentrations are typically analyzed at the most congested intersection locations, because if impacts were less than significant in close proximity to the most congested intersections, impacts would also be less than significant at less congested intersections.

To examine potential traffic impacts from the Project, a Traffic Impact Analysis was prepared by Urban Crossroads in 2011. This study examined the traffic volumes and Levels of Service (LOS) at intersections surrounding the Project both with and without the Project-generated traffic. Traffic projections were made for the Project in 2010, 2013, and 2030.

The intersections forecasted for existing plus Project intersections to have the five highest traffic volumes and an LOS F (prior to any traffic mitigation) in both forecast years were identified from the traffic study and a CO hot spot assessment was performed for each intersection. This approach represents a worst-case analysis since these intersections will not operate at LOS F as a result of the implementation of mitigation measures when the Project is operational. The highest CO emissions would be expected at such intersections because these intersections exhibit the highest intersection traffic volumes and congestion. CO impacts would be expected to be less at all other intersections. In estimating traffic volumes, the traffic generated by the Project was added to traffic growth in the area as well as from traffic from projects that are in the process of or have been approved by the City of Redlands.

The CO emission factors used to calculate vehicle emissions at the various intersections depend on vehicle speed and vehicle mix and were derived from the ARB EMFAC2007 mobile source emission model for the years 2010, 2013, and 2030. The results of the CO hot spot assessment are provided in Table 3.3-19 for the year 2010, Table 3.3-20 for the year 2013, and Table 3.3-21 for the future year of 2030.

Table 3.3-19: Carbon Monoxide Concentrations at Intersections – 2010

Intersection	Estimated CO Concentration (ppm)		Significant Impact?
	1 Hour	8 Hour	
8: Alabama Street and Lugonia Avenue	4.4	3.2	No
9: Alabama St. and I-10 Westbound Ramps	4.3	3.1	No
10: Alabama St. and I-10 Eastbound Ramps	4.3	3.1	No
11: Alabama Street and Redlands Boulevard	4.4	3.2	No
17: Tennessee Street and Lugonia Avenue	4.4	3.2	No
Source: Michael Brandman Associates, 2011			

Table 3.3-20: Carbon Monoxide Concentrations at Intersections – 2013

Intersection	Estimated CO Concentration (ppm)		Significant Impact?
	1 Hour	8 Hour	
8: Alabama Street and Lugonia Avenue	4.3	3.1	No
9: Alabama St. and I-10 Westbound Ramps	4.3	3.1	No
11: Alabama Street and Redlands Boulevard	4.2	3.0	No
14: SR-210 Westbound Ramps and San Bernardino Avenue	4.4	3.2	
17: Tennessee Street and Lugonia Avenue	4.2	3.0	No
Source: Michael Brandman Associates, 2011			

Table 3.3-21: Carbon Monoxide Concentrations at Intersections – 2030

Intersection	Estimated CO Concentration (ppm)		Significant Impact?
	1 Hour	8 Hour	
8: Alabama Street and Lugonia Avenue	3.6	2.6	No
9: Alabama St. and I-10 Westbound Ramps	3.5	2.6	No
11: Alabama Street and Redlands Boulevard	3.5	2.6	No
12: SR-210 Eastbound Ramps and San Bernardino Avenue	3.5	2.6	No
14: SR-210 Westbound Ramps and San Bernardino Avenue	3.7	2.7	No
Source: Michael Brandman Associates, 2011			

The CO hot spot analysis demonstrated that Project emissions of CO during operation at Project impacted intersections along with emissions from other foreseeable projects in the area would not result in an exceedance of the most stringent ambient air quality standards for CO. Therefore, according to this criterion, air pollutant emissions during operation would result in a less than significant impact.

Level of Significance Before Mitigation

Potentially significant.

Mitigation Measures

Mitigation Measures AQ-1 and AQ-2 are required (see Impact AQ-1).

Reducing the hours of equipment operation per day and/or requiring that the engines are Tier 2 or higher would reduce NOx emissions (mitigation measure AQ-1). The mitigation is applied in

CalEEMod by requiring Tier 2 engines and reducing the hours of the equipment. Similar to mitigation measure AQ-1, measure AQ-2 would reduce the equipment in operation at one time. The mitigated concentrations are shown in Table 3.3-22. As shown in the table, mitigation reduces impacts to less than significant.

Table 3.3-22: Localized Construction Impacts – Construction (Mitigated)

Air Pollutant	Averaging Time, Units	Local Project Impact	Background Air Quality	Total	Standard/ Threshold	Significant Impact?
Nitrogen dioxide (NO_2)	1-hour, ppm	0.078	0.091	0.169	0.18	No
Source: Michael Brandman Associates 2011.						

Level of Significance After Mitigation

Less than significant.

Cumulative Impacts

Impact AQ-3: **Result in a cumulatively considerable net increase of a criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)?**

[CEQA Air Quality Threshold c]

Impact Analysis

According to the checklist in the CEQA Guidelines, Appendix G, a project would create a significant impact if it would "result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)."

Section 15130(b) of the CEQA Guidelines states the following:

> The following elements are necessary to an adequate discussion of significant cumulative impacts: 1) Either: (A) A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency, or (B) A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact.

In accordance with CEQA Guidelines 15130(b), this analysis of cumulative impacts is based on a summary of projections analysis. This analysis considers the current CEQA Guidelines, which includes the recent amendments approved by the Natural Resources Agency and effective on March 18, 2010. This analysis is based on the 2003 and 2007 AQMPs. The South Coast Air Basin is in

nonattainment for ozone, particulate matter (PM_{10} and $PM_{2.5}$), and nitrogen dioxide, which means that concentrations of those pollutants currently exceed the ambient air quality standards for those pollutants. When concentrations of ozone, PM_{10}, $PM_{2.5}$, and nitrogen dioxide exceed the ambient air quality standard, then those sensitive to air pollution (i.e., children, elderly, sick) could experience health effects such as decrease of pulmonary function and localized lung edema in humans and animals, increased mortality risk, and risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans.

Under the amended CEQA Guidelines, cumulative impacts may be analyzed using other plans that evaluate relevant cumulative effects. The AQMPs describe and evaluate the future projected emissions sources in the South Coast Air Basin and sets forth a strategy to meet both state and federal Clear Air Act planning requirements and federal ambient air quality standards. Therefore, the AQMPs are relevant plans for a CEQA cumulative impacts analysis. The 2003 AQMP updates the attainment demonstration for the federal standards for ozone and PM_{10}; replaces the 1997 attainment demonstration for the federal CO standard and provides a basis for a maintenance plan for CO for the future; and updates the maintenance plan for the federal nitrogen dioxide standard that the South Coast Air Basin has met since 1992. The 2007 AQMP focuses on ozone and $PM_{2.5}$. The AQMP also incorporates significant new scientific data, emission inventories, ambient measurements, control strategies, and air quality modeling.

In accordance with CEQA Guidelines section 15064, subdivision (h)(3), a lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the Project will comply with the requirements in a previously approved plan or mitigation program. As identified in Impact AQ-1, the Project complies with the control measures in the 2003 and the 2007 AQMP and all of the SCAQMD's applicable rules and regulations. Under the CEQA Guidelines Amendments, the lead agency should explain how implementing the particular requirements in the plan, regulation, or program ensures that the Project's incremental contribution to the cumulative effect is not cumulatively considerable. To explain how implementing the requirements in the AQMPs ensures the Project's incremental contribution to the cumulative effect is not cumulatively considerable, the following three-pronged analysis was performed. To result in a less than significant impact, the following criteria must be true:

1. Regional analysis: emissions of nonattainment pollutants must be below the regional significance thresholds. This is an approach recommended by the SCAQMD in its comment letters.
2. Summary of projections: the project must be consistent with current air quality attainment plans including control measures and regulations. This is an approach consistent with Section 15130(b) of the CEQA guidelines.

3. Cumulative health impacts: the project must result in less than significant cumulative health effects from the nonattainment pollutants. This approach correlates the significance of the regional analysis with health effects, consistent with the court decision, *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1219-20.

The South Coast Air Quality Management District 1993 Handbook suggests three voluntary approaches to determine cumulative significance. The first approach is a 1-percent-per-year reduction (or 18 percent over 18 years to the year 2010) in Project emissions of VOC, NO_x, CO, PM_{10}, and SO_x. This approach is not straightforward and operational reductions are not easy to quantify. The second approach is not applicable because it relies on SCAQMD Regulation XV, which was repealed in 1995 and therefore is not applicable. The third approach is to reduce the rate of growth in vehicle miles traveled and trips. In this approach, the rate of growth in vehicle miles traveled and trips "should be held to the rate of population or household growth." Data that was used by Southern California Association of Governments in the AQMP should be used in this approach; however, that data is not available. Therefore, the approaches in the 1993 SCAQMD Handbook pertaining to cumulative impacts are not used.

Criterion 1: Regional Impact Analysis

If an area is in nonattainment for a criteria pollutant, then the background concentration of that pollutant has historically been over the ambient air quality standard. It follows that if a project exceeds the regional threshold for that nonattainment pollutant, then it would result in a cumulatively considerable net increase of that pollutant and result in a significant cumulative impact.

The Basin is in nonattainment for nitrogen dioxide, PM_{10}, $PM_{2.5}$, and ozone. Therefore, if the project exceeds the regional thresholds for PM_{10}, or $PM_{2.5}$, then it contributes to a cumulatively considerable impact for those pollutants. Additionally, if the Project exceeds the regional threshold for NO_x or VOC, which are precursors to the formation of ozone and PM_{10} and $PM_{2.5}$, then it follows that the Project would contribute to a cumulatively considerable impact for ozone, PM_{10} and $PM_{2.5}$. If the Project exceeds the threshold for NOx, it would contribute to nitrogen dioxide concentrations.

Project impacts on a regional scale may occur many miles away from the Project site. Project emissions when added to the overall emission burden of the Basin could result in a cumulatively significant impact.

Other parameters (besides those presented in Impact AQ-2) which are used to estimate emissions such as the worker and vendor trips and trip lengths utilize the CalEEMod defaults, with the addition of 5 daily haul trips during grading, which is to haul the construction equipment to the site or any import/export of material. The trips assumptions are provided in Table 3.3-23.

Table 3.3-23: Construction Trips Assumptions

Phase	Trips per day			Trip Length (miles)		
	Worker	Vendor	Haul	Worker	Vendor	Haul
Grading of main Project	30	0	5	10.8	7.3	20
Grading of outparcels	15	0	0	10.8	7.3	20
Paving	15	0	1	10.8	7.3	20
Building	91	45	0	10.8	7.3	20
Coating	18	0	0	10.8	7.3	20

Notes:
Worker fleet is light duty mix; vendor fleet is a heavy duty truck mix; hauling vehicle mix is heavy-heavy duty trucks (all CalEEMod defaults)
Source: CalEEMod defaults

Construction emissions are calculated during each period according to the type and level of construction activity occurring during the period. Activities can be discreet or overlapping. Emissions occur from construction equipment, fugitive dust, asphalt paving, architectural coating, and worker and delivery vehicles. Table 3.3-24 summarizes the Project's short-term regional construction emissions without application of mitigation measures for each construction activity (however, the particulate matter emissions do include compliance with the mitigation measures outlined in SCAQMD Rule 403). As shown in Table 3.3-24, without mitigation, the Project's construction emissions would exceed the SCAQMD regional emission thresholds for VOC and NO_x during construction. Therefore, the short-term construction emissions would have a potentially significant regional impact.

Table 3.3-24: Regional Construction Emissions (Without Mitigation)

Source	Onsite and Offsite Emissions (pounds per day)					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Grading of main Project	19.2	158.0	87.3	0.2	17.6	11.3
Grading of outparcels	8.9	72.2	40.5	0.1	7.4	4.8
Paving	9.4	35.7	22.2	<0.1	3.4	3.1
Building	12.2	76.9	53.6	0.1	6.7	5.1
Coating	116.0	3.1	3.1	0.0	0.5	0.3
Overlapping: Paving, Building, Coating	*137.6*	*115.7*	*78.9*	*0.1*	*10.6*	*8.5*
Maximum Daily Emissions	137.6	158.0	87.3	0.2	17.6	11.3

Table 3.3-24 (cont.): Regional Construction Emissions (Without Mitigation)

Source	Onsite and Offsite Emissions (pounds per day)					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Significance Threshold	75	100	550	150	150	55
Significant Impact?	Yes	Yes	No	No	No	No

Notes:
The maximum daily emissions refer to the maximum emissions that would occur in one day. It is assumed that paving, building, and coating would overlap.
VOC = volatile organic compounds NO_x = nitrogen oxides CO = carbon monoxide
SO_x = sulfur oxides PM_{10} and $PM_{2.5}$ = particulate matter
Source: Michael Brandman Associates 2011.

Mobile source emissions from motor vehicles are the largest single long-term source of air pollutants from the operation of the Project and consist of emissions from delivery trucks and customer and worker vehicles. Small amounts of emissions are also generated from area sources such as landscaping equipment, use of consumer products, natural gas consumption, and architectural coating/painting and from the operation of the service station. The emissions were generated using CalEEMod; assumptions are discussed in Impact AQ-2.

Operational emissions (unmitigated) from mobile and area operational emission sources as derived from CalEEMod and from the service station are shown in Table 3.3-25 for the summer season and **Error! Reference source not found.** for the winter season as emissions are slightly different between seasons.

Table 3.3-25: Regional Operational Emissions – 2010

Source	Summer Emissions (pounds per day)					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Mobile: Employee, Customers	202	165	1,979	2	220	9
Mobile: Delivery trucks	3	23	16	<1	2	1
Natural gas	<1	3	2	<1	<1	<1
Coating and consumer products	7	0	0	0	0	0
Service Station	21	0	0	0	0	0
Total Daily Emissions	233	191	1,997	2	222	10
Significance Threshold	55	55	550	150	150	55
Significant Impact?	Yes	Yes	Yes	No	Yes	No

Notes:
VOC = volatile organic compounds NO_x = nitrogen oxides CO = carbon monoxide
SO_x = sulfur oxides PM_{10} and $PM_{2.5}$ = particulate matter
Source: Michael Brandman Associates 2011.

Table 3.3-26: Regional Operational Emissions – 2013

Source	Summer Emissions (pounds per day)					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Mobile: Employee, Customers	167	121	1567	2	219	9
Mobile: Delivery trucks	2	17	12	<1	2	1
Natural gas	<1	3	2	<1	<1	<1
Coating and consumer products	7	0	0	0	0	0
Service Station	21	0	0	0	0	0
Total Daily Emissions	197	141	1,581	2	221	10
Significance Threshold	55	55	550	150	150	55
Significant Impact?	Yes	Yes	Yes	No	Yes	No

Notes:
VOC = volatile organic compounds NO_x = nitrogen oxides CO = carbon monoxide
SO_x = sulfur oxides PM_{10} and $PM_{2.5}$ = particulate matter
Source: Michael Brandman Associates 2011.

Table 3.3-27: Regional Operational Emissions – 2030 (Summer)

Source	Summer Emissions (pounds per day)					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Mobile: Employee, Customers	98	46.2	713	2	221	10
Mobile: Delivery trucks	1	6.3	4	<1	1	<1
Natural gas	<1	2.5	2	<1	<1	<1
Coating and consumer products	7	0.0	0	0	0	0
Service Station	21	0.0	0	0	0	0
Total Daily Emissions	127	55.0	719	2	222	10
Significance Threshold	55	55	550	150	150	55
Significant Impact?	Yes	Yes	Yes	No	Yes	No

Notes:
VOC = volatile organic compounds NO_x = nitrogen oxides CO = carbon monoxide
SO_x = sulfur oxides PM_{10} and $PM_{2.5}$ = particulate matter
Source: Michael Brandman Associates 2011.

Table 3.3-28: Regional Operational Emissions – 2030 (Winter)

Source	Winter Emissions (pounds per day)					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Mobile: Employee, Customers	98	52.6	708	2	221	10
Mobile: Delivery trucks	6	6.4	4	<1	1	<1
Natural gas	<1	2.5	2	<1	<1	<1
Coating and consumer products	7	0.0	0	0	0	0
Service Station	21	0.0	0	0	0	0
Total Daily Emissions	132	61.5	714	2	222	10
Significance Threshold	55	55	550	150	150	55
Significant Impact?	Yes	Yes	Yes	No	Yes	No

Notes:
VOC = volatile organic compounds NO_x = nitrogen oxides CO = carbon monoxide
SO_x = sulfur oxides PM_{10} and $PM_{2.5}$ = particulate matter
Source: Michael Brandman Associates 2011.

As shown above, the operation of the Project would exceed the SCAQMD's regional operational significance thresholds for VOC, NO_x, CO, and PM_{10}. VOC and NO_x are precursors in the formation of ozone and both contribute to the formation of PM_{10} and $PM_{2.5}$, pollutants for which the Basin has been identified as a non-attainment area (i.e., an area exceeding national or State standards). Thus, even though the Project's incremental emissions by themselves would not likely exceed the ozone, PM_{10} and $PM_{2.5}$ standards, their contribution to the overall SCAQMD regional emission burden would add to a cumulatively considerable impact. Therefore, the Project does not meet Criterion 1.

Note that as discussed in Impact AQ-2, during operation the Project would not exceed the ambient air quality standards for the pollutants assessed. This is based on localized emissions and concentrations. The analysis under this impact assesses the emissions based on the regional thresholds identified by the SCAQMD. Based on the regional thresholds, the cumulative impact is significant.

Criterion 2: Consistency with Existing Air Quality Plans

The geographic scope for cumulative criteria pollution from air quality impacts is the Basin, because that is the area in which the air pollutants generated by the sources within the basin circulate and are often trapped. The SCAQMD is required to prepare and maintain an AQMP and a State Implementation Plan to document the strategies and measures to be undertaken to reach attainment of ambient air quality standards. While the SCAQMD does not have direct authority over land use decisions, it recognized that changes in land use and circulation planning are necessary to maintain clean air. The SCAQMD evaluated the entire basin when it developed the AQMP.

According to the above analysis, the Project is not consistent with the most recent AQMP without mitigation. Therefore, the Project does not meet Criterion 2.

Criterion 3: Cumulative Health Impacts

The basin is in nonattainment for ozone, nitrogen dioxide, PM_{10}, and $PM_{2.5}$, which means that the background levels of those pollutants are at times higher than the ambient air quality standards. The air quality standards were set to protect public health, including the health of sensitive individuals (i.e., elderly, children, and the sick). Therefore, when the concentration of those pollutants exceeds the standard, it is likely that some sensitive individuals in the population will experience health effects as described above in the sub-section, Air Pollutants. However, the health effects are a factor of the dose-response curve. Concentration of the pollutant in the air (dose), the length of time exposed, and the response of the individual are factors involved in the severity and nature of health impacts. If a significant health impact results from Project emissions, it does not mean that 100 percent of the population would experience health effects. There are no models or methodology to calculate with certainty what health risks would be experienced from potential cumulative impacts.

The regional analysis of construction emissions indicates that without mitigation, the Project would exceed the SCAQMD regional significance thresholds for VOC and NO_x (ozone precursors). In addition, long-term operational emissions of VOC and NO_x are over the District's significance thresholds. Because ozone is a secondary pollutant (it is not emitted directly but formed by chemical reactions in the air), it can be formed miles downwind of the Project site. Project emissions of VOC and NO_x may contribute to the background concentration of ozone and cumulatively cause health effects. Project emissions of NOx may contribute to the background concentration of nitrogen dioxide and cause health effects.

Health impacts from ozone exposure may or may not include the following:

(a) Pulmonary function decrements and localized lung edema in humans and animals

(b) Risk to public health implied by alterations in pulmonary morphology and host defense in animals

(c) Increased mortality risk

(d) Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans

Short-term exposure to ozone can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes. Children who live in high ozone communities and who participate in multiple sports have been observed to have a higher asthma risk. This is a significant cumulative health impact associated with ground-level ozone concentrations.

Health effects from nitrogen dioxide may include the following:

(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups
(b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes
(c) Contribution to atmospheric discoloration

Additionally, during operation, the Project could result in a significance cumulative contribution to PM_{10}. Sensitive individuals may experience health impacts when concentrations of those pollutants exceed the ambient air quality standards. Health impacts from particulate matter may include the following: (a) exacerbation of symptoms in sensitive patients with respiratory or cardiovascular disease; (b) declines in pulmonary function growth in children; (c) and/or increased risk of premature death from heart or lung diseases in the elderly. Therefore, the Project does not meet Criterion 3.

Criteria pollutants are treated differently from toxic air contaminants because criteria pollutants have state and federal standards and are set in a different regulatory environment than toxic air contaminants. Diesel particulate matter is a major part of PM2.5 and PM10 and thus is included in the criteria pollutant impact analysis for PM2.5 and PM10. Benzene is a hydrocarbon whose emissions are also estimated as part of the Project's operational VOC emissions (see regional operational emissions). Further, risk (as in estimating health risks) is estimated on a probability basis (e.g., cancer risk of 10 in one million) while criteria pollutant impacts are expressed as a not to be exceeded basis. Therefore, criteria pollutant impacts are not expressed as a risk.

Level of Significance Before Mitigation

Potentially significant impact.

Mitigation Measures

Construction Criteria Air Pollutant Measures

Mitigation Measure AQ-1 and AQ-2 are required (Impact AQ-1).

MM AQ-3 Paint used during construction of the Project shall have a volatile organic compound content less than 125 grams per liter.

Operational Criteria Air Pollutant Measures

Mitigation measure T-6a is also required. Note that there are a variety of mitigation measures in the Transportation section of the EIR that would improve motor vehicle traffic flow. However, no reduction is taken for those measures because they encourage motor vehicle use. Cities with limited motor vehicle lanes, abundant and safe bicycle lanes, and dedicated alternate transportation lanes will observe reductions in vehicle miles traveled. Increasing the ease for motor vehicles encourages motor vehicle use and not alternate transportation.

MM AQ-4 Electrical hookups shall be provided in all loading docks for transportation refrigeration units visiting the site.

MM AQ-5 The City of Redlands shall improve traffic flow by signal synchronization along San Bernardino Avenue, Tennessee Street, and Pennsylvania Avenue.

MM AQ-6 All dock and delivery areas shall be posted with signs informing truck drivers of the California Air Resources Board regulations including the following:

a) Truck drivers shall turn off engines when not in use;

b) All delivery trucks servicing the Project shall not idle for more than five minutes per truck trip per day; and

c) Telephone numbers of the building facilities manager and the California Air Resources Board to report violations.

MM AQ-7 The Project shall incorporate pedestrian pathways between onsite uses. Site design and building placement shall provide pedestrian connections between internal and external facilities. Physical barriers such as walls, berms, landscaping, merchandising, and slopes that impede bicycle or pedestrian circulation shall be eliminated. Sidewalks shall be a minimum of five feet wide.

MM AQ-8 Transportation Demand Management (TDM) Program: A TDM program shall be instituted for the Project or the buildings shall join an existing program located within a quarter mile radius from the Project site. The TDM program shall do the following:

a) Publish ride-sharing information for ride sharing vehicles and provide a website or message board for coordinating rides.

b) Ensure that appropriate bus route information is placed in each building.

c) Advertise the TDM Program to the Project's employees.

MM AQ-9 Bicycle parking shall be provided in safe and convenient locations throughout the Project, within 30 feet from all main entrances.

MM AQ-10 In the Walmart building, there shall be at least one locker for each employee working during the peak day. A minimum of five percent of the lockers shall be at least 38 inches high by 12 inches wide by 15 inches deep and reserved for employees who bicycle to work.

MM AQ-11 Class II bicycle lanes shall be provided on the new sections of roadway constructed or sides of any roadways that are widened as part of this Project.

Level of Significance After Mitigation

Construction: Less than significant. Mitigation measures AQ-1, AQ-2, and AQ-3 would reduce the significance of construction emissions, as shown in Table 3.3-29. The emissions reductions from AQ-1 are estimated by CalEEMod. The emission reductions from AQ-2 (not allowing overlap) are manually estimated by changing the overlapping additions. To attribute the emission reductions from AQ-3: the unmitigated emissions were estimated assuming 250 grams of VOC per Liter; assuming 125 grams per Liter would reduce emissions by half.

Table 3.3-29: Construction Air Pollutant Emissions (Mitigated)

Source	Onsite and Offsite Emissions (pounds per day)					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Grading of main Project	46.1	95.8	70.7	0.1	11.9	6.7
Grading of outparcels	8.9	72.2	40.5	0.1	7.4	4.8
Paving (parking lots, roads)	9.4	35.7	22.2	<0.1	3.4	3.1
Building	12.2	76.9	53.6	0.1	6.7	5.1
Coating	58.0	3.1	3.1	0.0	0.5	0.3
Overlapping: Paving, Coating	*67.4*	*38.8*	*25.3*	*<0.0*	*3.9*	*3.4*
Overlapping: Building, Coating	*70.2*	*80.0*	*56.7*	*0.1*	*7.2*	*5.4*
Maximum Daily Emissions	70.2	95.8	70.7	0.1	11.9	6.7
Significance Threshold	75	100	550	150	150	55
Significant Impact?	No	No	No	No	No	No

Notes:
The maximum daily emissions refer to the maximum emissions that would occur in one day.
VOC = volatile organic compounds NO_x = nitrogen oxides CO = carbon monoxide
SO_x = sulfur oxides PM_{10} and $PM_{2.5}$ = particulate matter
Source of emissions: Appendix A: CalEEMod Output.
Source of thresholds: South Coast Air Quality Management District 2011a.

Operation: Significant and unavoidable. The Project would result in a cumulatively significant impact even after mitigation because of the exceedances of the SCAQMD's regional emission thresholds for VOC, NOx, CO, and PM10. The Project may result in cumulative health effects from cumulative exposures from ozone, nitrogen dioxide, and PM10. The emission reductions resulting from the implementation of mitigation measures AQ-5, AQ-7, AQ-8, AQ-9, AQ-10, AQ-11, and T-6a would result in approximately a 1 percent reduction in motor vehicle emissions (see Table 3.17-6 in the Greenhouse Gas EIR section for documentation). This reduction would not reduce operational emissions to less than significant.

Sensitive Receptors

Impact AQ-4	**Expose sensitive receptors to substantial pollutant concentrations? [CEQA Air Quality Threshold d]**

Impact Analysis

Sensitive Receptors

Those who are sensitive to air pollution include children, the elderly, and persons with preexisting respiratory or cardiovascular illness. For purposes of CEQA, the SCAQMD considers a sensitive receptor to be a location where a sensitive individual could remain for 24 hours, such as residences, hospitals, or convalescent facilities. Commercial and industrial facilities are not included in the definition because employees do not typically remain onsite for 24 hours. However, when assessing the impact of pollutants with 1-hour or 8-hour standards (such as nitrogen dioxide and carbon monoxide), commercial and/or industrial facilities would be considered sensitive receptors for those purposes.

The closest existing sensitive receptors are residences located approximately 25 meters (82 feet) to the east and southeast of the Project across Karon Street. A review of the City of Redlands General Plan (City of Redlands 1995) indicates that the areas to the north, south, and west of the Project site have been designated as commercial and, therefore, would not involve the future location of sensitive receptors in these areas. The closest schools are the Lugonia School located 0.8 mile east of the Project, Clement Middle School located 1.0 miles east of the Project, and the Packinghouse Christian Academy located 0.6 mile west of the Project.

Criterion 1: Localized Significance Analysis

The localized analysis uses thresholds that represent the maximum emissions for a Project that would not 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. The thresholds are also based on the location of the sensitive receptors. If the Project results in emissions less than those thresholds, it follows that the Project would not cause or contribute to an exceedance of the standard and, therefore, would not expose sensitive receptors to substantial pollutant concentrations.

The localized analysis discussed in Impact AQ-2 demonstrated that with incorporation of mitigation, the Project would not exceed any SCAQMD localized significance threshold during construction or operation. Therefore, the Project would not expose sensitive receptors to substantial pollutant concentrations. The Project meets Criterion 1.

Criterion 2: CO Hot Spot Analysis

The CO hot spot analysis presented in the discussion of Impact AQ-2 found that the CO emissions from Project-related traffic, combined with CO emissions resulting from the growth in background traffic and identified development projects, would not result in the formation of a CO hot spot and, thus, not result in an exceedance of the CO air quality standards. The standards are set to protect the

health of sensitive individuals. Because the standards would not be exceeded, the Project would not result in a significant impact related to CO. Therefore, the Project meets Criterion 2.

Criterion 3: Toxic Air Contaminants

Cancer risk is expressed in terms of a probability that an individual out of a population of one million people would contract cancer because of continuous exposure to toxic air contaminants over a specified period. For sensitive receptors such as residences, this exposure period is a lifetime of 70 years.

Assumptions

The operation of the Project would result in the release of two primary TACs that pose the greatest potential to cause a health risk to the community surrounding the Project. These two TACs are diesel particulate matter (DPM) from the operation of diesel-powered trucks and transport refrigeration units and benzene from the operation of a gasoline service station that would be located at the southwest corner of the Project. Exposure to these TACs would have the potential to cause health risks in terms of excess risk of cancer and chronic and acute non-cancer health effects as discussed below.

The air dispersion model, receptor locations, and meteorological data used in the HRA used the same information as that used in the assessment of criteria pollutant impacts described in Impact AQ-2.

The cancer risk from DPM and benzene is calculated by multiplying the annual average DPM and benzene concentrations calculated using the AERMOD model and an inhalation exposure factor as in Equation 1 below.

$$\text{Cancer Risk} = \text{Inhalation cancer potency factor} \times \text{Dose-inhalation} \qquad \text{(EQ-1)}$$

Where:

Cancer Risk = Total individual lifetime excess cancer risk defined as the cancer risk a hypothetical individual faces if exposed to carcinogenic emissions from a particular facility continuously, 24 hours/day, for a 70-year lifetime; this risk is defined as an excess risk because it is above and beyond the background cancer risk to the population contributed by emission sources not related to the Project; cancer risk is expressed in terms of risk per million exposed individuals.

Inhalation cancer potency factor (CPF) = 1.1 (milligrams per kilogram per day)$^{-1}$ for DPM and 0.1 (milligrams per kilogram per day)$^{-1}$ for benzene; inhalation is the principal exposure pathway for cancer impacts for both DPM and benzene

$$\text{Dose-inhalation} = C_{air} \times (\text{DBR} \times \text{A} \times \text{EF} \times \text{ED} \times 10^{-6} / \text{AT}) \times 10^{6} \qquad \text{(EQ-2)}$$

Where:

C_{air} = Annual average DPM and benzene concentrations calculated from the AERMOD model in $\mu g/m^3$

DBR = Daily breathing rate
A = Inhalation absorption factor
EF = Exposure frequency
ED = Exposure duration
AT = Averaging time period over which the exposure is averaged

Values for the components of the Inhalation Exposure Factor are shown in Table 3.3-30.

Table 3.3-30: Values of the Inhalation Exposure Factor for DPM and Benzene

Receptor	CP - DPM (mg/kg-day)-1	CP – Benzene (mg/kg-day)-1	DBR (liters/kg-day)	EF (days/yr)	ED (yrs)	AT (days)
Sensitive/ Residential	1.1	0.1	302	350	70	25,550
Source: Michael Brandman Associates 2011						

Applying Equations 1 and 2 with the values for the various factors shown in Table 3.3-30, the Cancer Risk for DPM and benzene individually and the total cancer risk are then calculated as:

Cancer $Risk_{DPM}$ = C_{DPM} x 318.5 (risk per million for sensitive receptors from DPM)
Cancer $Risk_{Benz}$= C_{Benz} x 29.0 (risk per million for sensitive receptors from benzene)
Total Cancer $Risk_{SR}$ = Cancer $Risk_{DPM}$ + Cancer $Risk_{Benz}$ (risk per million for sensitive receptors)

Where:

$Risk_{DPM}$ = cancer risk from DPM emissions
$Risk_{BENZ}$ = cancer risk from benzene emissions
SR = risk at locations of sensitive receptors

Exposures to TACs such as DPM and benzene can also cause chronic (long-term) related non-cancer illnesses such as reproductive effects, respiratory effects, eye sensitivity, immune effects, kidney effects, blood effects, central nervous system, birth defects, or other adverse environmental effects. Risk characterization for non-cancer health risks from DPM and benzene is expressed as a hazard index (HI). The HI is a ratio of the predicted concentration of the Project's emissions to a concentration considered acceptable to public health professionals, termed the Reference Exposure Level (REL). A significant risk is defined by the SCAQMD as an HI of 1 or greater. When

evaluating chronic non-cancer effects due to TAC exposures, a hazard quotient (HQ) is established for each individual TAC as follows and for each target organ[3] affected by the individual TAC:

$$HQ_i = C_{air}/REL_i \qquad \text{(EQ-9)}$$

Where:

HQ_i = chronic hazard quotient for each TAC
C_{air} = Annual average concentration of each TAC ($\mu g/m^3$)
REL = Chronic Reference Exposure Level ($\mu g/m^3$)

To evaluate the potential for adverse non-cancer health effects from simultaneous exposure to multiple TACs such as DPM and benzene, the HQs for all TACs that affect the same target organ are summed yielding a hazard index (HI) as follows:

$$HI_{to} = \Sigma_{to}\, HQ_{tac} \qquad \text{(EQ-12)}$$

Where:

HI_{to} = sum of the hazard quotients for all TACs affecting the same target organ
HQ_{tac} = hazard quotient for TAC and target organ.

The California OEHHA has assigned a chronic non-cancer REL of 5 $\mu g/m^3$ for DPM and a chronic non-cancer REL of 60 $\mu g/m^3$ for benzene (California Environmental Protection Agency 2009). The HQs for TACs that produce effects in the same target organ and tissues results in an HI that reflects possible cumulative hazards. Both DPM and benzene have effects on the respiratory system, which accounts for essentially all of the potential chronic non-cancer hazards from these TACs. Therefore, the only HI calculated was for the respiratory system.

Estimation of a short-term acute non-cancer hazard index is estimated in a similar manner to the chronic long-term non-cancer hazard index. Both estimations estimate the hazard index as the ratio of the estimated concentration of a TAC divided by a REL, or in this case a REL established for acute exposures. Of the two TACs evaluated in this report, only benzene has been assigned an acute REL by the California OEHHA. The value of the benzene REL is 1,300 $\mu g/m^3$. However, for purposes of the estimation of the acute hazard, the value of the air concentration of benzene as calculated using the AERMOD air dispersion model is an average over six hours in accordance with the toxic exposure to benzene.

The sources of DPM from the Project are associated with emissions from the:

- Diesel truck traffic exhaust;

[3] A target organ is a biological organ(s) most adversely affected by exposure to a chemical substance and includes the respiratory system, cardiovascular system, eyes, nervous system, hematological system, immune system, reproductive system, developmental system, skin, and endocrine system

- Diesel truck idling (15 minutes per truck delivery for all buildings);
- Diesel emissions from worker/customer, urban bus, and motor home vehicles; and
- Operation of the TRUs.

For the assessment of health risks to sensitive/residential receptors, the DPM emissions factors derived from the ARB EMFAC model were developed as an average of fleet emission factors over a 70-year time period commencing in 2010 (2010 to 2080 average emissions) and in 2013 (2013 to 2083 average emissions). For the year 2030 assessment, the DPM emission factors from the EMFAC2007 model in the year 2030 were utilized. The DPM emission factors used in this assessment are provided in Table 3.3-31.

Table 3.3-31: Average Mobile Source DPM Emission Factors for Project Operations

Scenario Year -———>	2010	2013	2030
Averaging Period ———>	**(2010 – 2079)**	**(2013-2082)**	**2030**
DPM Exhaust Emission Factors			
Exhaust Emissions			
4+ axle truck (g/mi)	0.22	0.17	0.10
2 axle truck (g/mi)	0.05	0.05	0.05
Customer/worker vehicles/bus (g/mi)	0.15	0.14	0.17
TRU (g/hp-hr)	0.05	0.04	0.02
DPM Idle Emission Factors			
4+ axle truck (g/hr)	0.34	0.22	0.17
2 axle truck (g/hr)	0.82	0.81	0.81
TRU (g/hp-hr)	0.05	0.04	0.02
Source: Michael Brandman Associates 2011			

Benzene emissions are associated with the operation of a gasoline service station located at the southwestern corner of the Project. Benzene emissions were estimated considering the following emission processes:

- Offloading of cargo tank trucks into the storage tanks at the station (Loading emissions);
- Gasoline vapors released from the storage tank due to temperature and pressure changes within the storage tank vapor space (Breathing emissions);
- Vehicle refueling process (Refueling emissions), and
- Spillage of fuels during vehicle fueling (Spillage emissions).

The emission factors for benzene emissions associated with the gasoline service station are shown in Table 3.3-32.

Table 3.3-32: Benzene Emission Factors for Service Station

Operation	Benzene (pounds of benzene per 1,000 gallons of fuel)
Service Station	
Loading	0.001260
Breathing	0.000075
Refueling	0.000960
Spillage	0.004200
Source: Michael Brandman Associates	

The benzene emission factors were assumed to be constant over both the 70-year and 40-year exposure periods. An annual gasoline throughput of 6.4 million gallons was assumed to estimate benzene emissions. This amounts to the delivery of tanker truck with two 8,800 gallon tanks each day.

The SCAQMD health risk significance thresholds specifically state that the cancer threshold (10 in one million cancer risk) is based on the incremental increase. Communications with SCAQMD staff indicate that the SCAQMD does not discourage lead agencies from reporting the total cumulative impact from all sources in the basin on an individual receptor; however the SCAQMD has not requested that a lead agency use the incremental threshold (10 in 1 million cancer risk) to determine cumulative significance. As stated by the SCAQMD:

> If we did, every project in the basin would be significant as I don't believe there is a single area with less than 10 in a million cancer risk based on MATES III. I believe our thresholds were designed so as to capture the truly significant projects under CEQA. As our agency and others (EPA, ARB) spend considerable resources outside of CEQA project reviews to clean up the air, it doesn't seem appropriate to me to use CEQA in the manner described (i.e., basin-wide risks determine project specific impacts)." (Email communication received from Ian MacMillan, SCAQMD on October 4, 2011)

This analysis addresses the impact to sensitive receptors, not onsite or offsite worker receptors, since the sensitive receptors (residences) would receive a greater impact than offsite workers. The offsite workers would not be exposed to the onsite pollutants for as long as the residences because they would only be there for eight hours or less.

The California Division of Occupational Safety and Health (Cal/OSHA) and the Centers for Disease Control and Prevention protects workers from safety hazards, including high air pollutant concentrations.

Onsite workers are not required to be addressed through this health risk assessment process. A document published by the California Air Pollution Control Officers Association (2009), Health Risk Assessments for Proposed Land Use Projects, indicates that onsite receptors are included in risk assessments if they are persons not employed by the Project. Persons not employed by the Project would not remain onsite for any significant period. Therefore, a health risk assessment for onsite workers is not required or recommended. The document also states that the guidance does not include how risk assessments for construction projects should be addressed in CEQA. Risks near construction projects are expected to be included at a later time as the toxic emissions from construction activities are better quantified. The equipment used during construction would emit DPM, which has been identified by the ARB as a carcinogen. However, the DPM emissions during construction are short term in nature. Determination of the health risk from DPM is considered over a 70-year exposure time for sensitive receptors. Therefore, considering the short timeframe during which DPM emissions would be emitted during construction, exposure to DPM is anticipated to be less than significant during construction.

During operation of the Project, diesel-powered delivery vehicles would emit DPM emissions from truck exhausts, idling, and the use of transport refrigeration units. A health risk assessment of these DPM emissions was performed to assess the health consequences from the DPM emissions from the onsite truck activity associated with Project operations on nearby sensitive receptors such as residences. Estimates of DPM emissions were prepared using the trip generation and vehicle information from the Project-specific traffic impact analysis, the diesel truck inventory established for the Project and emission factors from the ARB EMFAC mobile source emission model. Because the California Environmental Protection Agency methodology (see report for reference) dictates that health risks are calculated over periods of 70-years for sensitive receptors, the estimates of DPM emissions were also averaged over each respective period using the fleet average emission factors contained in the EMFAC2007 model.

In addition to the DPM emissions from the diesel truck traffic, the Project description also calls for the operation of a gasoline service station located at the southwest corner of the Project. As a result, emissions of benzene from the operation of the service station were also analyzed in the health risk assessment. Benzene has been identified by the ARB as a toxic air contaminant having both cancer and non-cancer health impacts. The estimation of benzene emissions follows the procedures of the California Air Pollution Control Officers Association risk assessment guidelines for gasoline service stations.

The estimation of health risks followed the guidance from the California Office of Environmental Health Hazard Assessment that uses the AERMOD air dispersion model to disperse the DPM and benzene emissions and to determine health risks from nearby sensitive receptors.

Results

The results of the health risk assessment are summarized in Table 3.3-33 based on the information provided in the Air Quality and Greenhouse Gas Analysis Report prepared by Michael Brandman Associates. This report is contained in the Draft EIR as Appendix B. Table 3.3-33 indicates that the

Project's operations would not exceed the SCAQMD's cancer risk health risk significance threshold for any scenario year.

The maximum chronic non-cancer risk is calculated to have a value of 0.0006 at the maximally impacted sensitive receptor or worker receptor. An acute non-cancer hazard index due to the emissions of benzene was estimated to be 0.001. The magnitudes of both the acute and chronic non-cancer indices are less than the SCAQMD hazard index of 1.0. Therefore, the operation of the Project would not exceed the SCAQMD's threshold for chronic or acute non-cancer risk.

Table 3.3-33: Sensitive Receptor Cancer Risks from Project Operations

Scenario Year	Maximum Lifetime Cancer Risk[(1)] (Risk per Million)	Significance Threshold (Risk per Million)	Exceeds Significance Threshold?
2010	0.8	10	No
2013	0.8	10	No
2030	0.6	10	No

Notes:
(1) Includes impacts from diesel particulate matter and benzene emissions
(2) The maximum impacted sensitive receptor is located approximately 25 meters from the east property line of the Project in the residential areas across Karon Street.
Source: Michael Brandman Associates 2011.

Level of Significance Before Mitigation

Potentially significant impact.

Mitigation Measures

Mitigation Measures AQ-1 and AQ-2 are required.

Level of Significance After Mitigation

Less than significant.

Objectionable Odors

Impact AQ-5 **Create objectionable odors affecting a substantial number of people? [CEQA Air Quality Threshold e]**

Impact Analysis

Individual responses to odors are highly variable and can result in a variety of effects. Generally, the impact of an odor results from a variety of interacting factors such as frequency, duration, offensiveness, location, and sensory perception. The frequency is a measure of how often an individual is exposed to an odor in the ambient environment. The intensity refers to an individual's or group's perception of the odor strength or concentration. The duration of an odor refers to the elapsed time over which an odor is experienced. The offensiveness of the odor is the subjective rating of the pleasantness or unpleasantness of an odor. The location accounts for the type of area in

which a potentially affected person lives, works or visits; the type of activity they are engaged in and the sensitivity of the impacted receptor.

Project Analysis

Diesel exhaust and VOCs would be emitted during construction of the Project, which are objectionable to some; however, emissions are short-term in nature only lasting as long as the construction equipment operates, would disperse rapidly from the Project site, and therefore should not be at a level to induce a negative odor response.

The odors from the operation of the Project would include the occasional scent from cooking odors from the restaurants, odors from trash recycling, and from the gasoline service station. However, these emission sources are generally located within the western half of the Project and, after accounting for distance and air dispersion, would not induce a negative odor response to nearby sensitive receptors.

Poorly maintained detention basins could result in odors. Therefore, with the implementation of Mitigation Measure AQ-12, sufficient maintenance as required within of the proposed detention basin will ensure the basin will operate as intended and will not emit any objectionable odors. Thus, no significant impact would result after implementation of mitigation.

Level of Significance Before Mitigation

Potentially significant.

Mitigation Measures

MM AQ-12 The Project shall have a Maintenance Plan for any detention basins, which includes a description of the routine and non-routine maintenance. The Plan shall include the following components:

- Routine inspections, particularly after major rainfall events, to check for obstructions and damage and to remove debris/trash.
- Vegetation management, including prohibiting the use of fertilizers and pesticides in and around the basins to minimize entry into downstream waters or the underwater basin.
- Routine trash, debris, and litter removal.
- Structural component check, to inspect the outlet structure, inlet, orifice, emergency spillway (if applicable) on a regular basis.
- Non-routine maintenance such as bank erosion stabilization and ensuring that all surfaces of the basin are vegetated for proper infiltration of runoff.
- Sediment removal once per year to ensure that the depth of the accumulated sediment is less than 25 percent of the original design depth. Sediment blocking inlets or outlets should be removed.

Level of Significance After Mitigation

Less than significant.