AIR QUALITY ANALYSIS

COTT BEVERAGE FACILITY

CITY OF SAN BERNARDINO, CALIFORNIA

LSA

February 2012

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1.0 EXECUTIVE SUMMARY

LSA Associates, Inc. (LSA) was retained to prepare an air quality study for the proposed Cott Beverage Facility project located in the City of San Bernardino (City) in San Bernardino County, California.

The air quality study provides a discussion of the proposed project, the physical setting of the project area, and the regulatory framework for air quality. The report provides data on existing air quality and evaluates potential air quality impacts associated with the proposed project. Modeled air quality levels are based upon trip generation for the proposed uses included in the project's traffic study.

On February 3, 2011, the South Coast Air Quality Management District (SCAQMD) released the California Emissions Estimator Model (CalEEMod). The purpose of this new model is to more accurately calculate air quality and greenhouse gas (GHG) emissions from direct and indirect sources and quantify applicable air quality and GHG reductions achieved from mitigation measures.

Emissions during project construction would not exceed any of the criteria pollutant thresholds established by the SCAQMD. Compliance with SCAQMD Rules and Regulations during construction will reduce construction-related air quality impacts from fugitive dust emissions and construction equipment emissions. Standard dust suppression measures have been identified for short-term construction to meet the SCAQMD emissions thresholds. Similarly, the proposed project would not exceed any of the localized significance thresholds (LSTs) during construction periods. The project construction emissions would not be significant.

Historical air quality data show that existing carbon monoxide (CO) levels for the project area and the general vicinity do not exceed either State or federal ambient air quality standards. The CO concentrations in the project area are much lower than the federal and State CO standards. The proposed project would not result in any significant increase in CO concentrations at intersections in the project vicinity. Therefore, project-related traffic would not significantly affect local CO levels under future year conditions, and the CO concentrations would be below the State and federal standards. No significant impact on local CO levels would occur. Pollutant emissions from project operation, calculated with the CalEEMod model (version 2011.1.1), would not exceed any of the SCAQMD thresholds. LSTs would not be exceeded by long-term emissions from the operation of the project.

The proposed project site is located in San Bernardino County. San Bernardino County is not among the counties that are found to have serpentine and ultramafic rock in their soils. Therefore, the potential risk for naturally occurring asbestos (NOA) during project construction is small and less than significant.

The proposed project is consistent with the Southern California Association of Governments (SCAG) Regional Comprehensive Plan (RCP) Guidelines and the SCAQMD Air Quality Management Plan (AQMP).

The evaluation was prepared in conformance with appropriate standards, utilizing procedures and methodologies in the SCAQMD California Environmental Quality Act (CEQA) Air Quality Handbook (SCAQMD 1993). Air quality data posted on the California Air Resources Board (ARB) and United States Environmental Protection Agency (EPA) websites are included to document the local air quality environment.

2.0 PROJECT DESCRIPTION

2.1 INTRODUCTION

This air quality impact analysis has been prepared to evaluate the potential air quality impacts and mitigation measures associated with the proposed Cott Beverage Facility project in the City of San Bernardino in San Bernardino County, California. This report is intended to satisfy the City's requirement for a project-specific air quality impact analysis by examining the impacts of the proposed uses on adjacent sensitive uses as well as the impacts on the proposed uses on the project site, and evaluating the mitigation measures required as part of the project design. Guidelines identified by the SCAQMD in its CEQA Air Quality Handbook (SCAQMD, April 1993) and associated updates will be followed in this air quality impact analysis.

2.2 PROJECT LOCATION

The project site is bounded to the west by Waterman Avenue; to the east by the existing Cott Beverage Facility; to the north by vacant land and existing commercial uses, with Mill Street further to the north; and to the south by existing industrial and commercial uses. The closest existing residential uses are approximately 50 feet (ft) from the project's southern boundary and 250 ft from the existing onsite structures. There are residential uses to the east approximately 400 ft from the project site. To the west of Waterman Avenue, there is a mix of commercial and other industrial uses. The City's Housing Authority has an office to the southwest of the site across Waterman Avenue. Figure 1 illustrates the location of the project.

2.3 PROJECT DESCRIPTION

The proposed project will be developed as an industrial warehouse building and is planned for a maximum of 346,084 square feet (sf) of building space, on a 14.46 acre (AC) lot. The project will be designed to incorporate many Leadership in Energy and Environmental Design (LEED) design characteristics but will not seek specific LEED certification. There will be 50 dock doors provided and 56 trailer parking positions. Access to the site will be provided via three driveways on Waterman Avenue. Figure 2 illustrates the proposed site plan for the project.

Figure 1: Project Location Map

Figure 2: Conceptual Site Plan

3.0 SETTING

3.1 REGIONAL AIR QUALITY

The project site is located in the non-desert portion of San Bernardino County, California, which is part of the South Coast Air Basin (Basin) and is under the jurisdiction of the SCAQMD. The air quality assessment for the proposed project includes estimating emissions associated with short-term construction and long-term operation of the proposed project.

A number of air quality modeling tools are available to assess the air quality impacts of projects. In addition, certain air districts, such as the SCAQMD, have created guidelines and requirements to conduct air quality analyses. The SCAQMD's current guidelines, included in its CEQA Air Quality Handbook (April 1993) and associated updates, were adhered to in the assessment of air quality impacts for the proposed project.

3.1.1 Regional Air Quality

Both the State of California (State) and the federal government have established health-based ambient air quality standards (AAQS) for seven air pollutants. As shown in Table A, these pollutants include ozone (O_3), CO, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), coarse particulate matter with a diameter of 10 microns or less (PM_{10}), fine particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), and lead. In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.

In addition to setting out primary and secondary AAQS, the State of California has established a set of episode criteria for O_3, CO, NO_2, SO_2, and PM_{10}. These criteria refer to episode levels representing periods of short-term exposure to air pollutants that actually threaten public health. Health effects are progressively more severe as pollutant levels increase from Stage One to Stage Three. An alert level is that concentration of pollutants at which initial stage control actions are to begin. An alert will be declared when any one of the pollutant alert levels is reached at any monitoring site and meteorological conditions are such that the pollutant concentrations can be expected to remain at these levels for 12 or more hours or to increase; or, in the case of oxidants, the situation is likely to recur within the next 24 hours unless control actions are taken.

Pollutant alert levels:

- O_3: 392 micrograms per cubic meter (µg/m^3) (0.20 parts per million [ppm]), 1-hour average
- CO: 17 milligrams per cubic meter (mg/m^3) (15 ppm), 8-hour average
- NO_2: 1,130 µg/m^3 (0.6 ppm) 1-hour average; 282 µg/m^3 (0.15 ppm) 24-hour average

Table A: Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone (O_3)	1-Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	--	Same as Primary Standard	Ultraviolet Photometry
	8-Hour	0.070 ppm (137 µg/m^3)		0.075 ppm (147 µg/m^3)		
Respirable Particulate Matter (PM_{10})	24-Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		--		
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	No Separate State Standard		35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	15.0 µg/m^3		
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared Photometry (NDIR)
	1-Hour	20 ppm (23 mg/m^3)		35 ppm(40 mg/m^3)		
	8-Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	—
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	Gas Phase Chemiluminescence	53 ppb (100 µg/m^3) (see footnote 8)	Same as Primary Standard	Gas Phase Chemiluminescence
	1-Hour	0.18 ppm (339 µg/m^3)		100 ppb (188 µg/m^3) (see footnote 8)	None	
Sulfur Dioxide (SO_2)	24-Hour	0.04 ppm (105 µg/m^3)	Ultraviolet Fluorescence	—	—	Spectrophotometry (Pararosaniline Method)
	3-Hour	—		—	0.5 ppm (1300 µg/m^3) (see footnote 9)	
	1-Hour	0.25 ppm (655 µg/m^3)		75 ppb (196 µg/m^3) (see footnote 9)	—	
Lead[10]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	High-Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m^3	Same as Primary Standard	
	Rolling 3-Month Average[11]	—		0.15 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. Method: Beta Attenuation and Transmittance through Filter Tape.		**No Federal Standards**		
Sulfates	24-Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1-Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[10]	24-Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

Source: California Air Resources Board, September 8, 2010.

Table footnotes are provided on the following page.

Table A Footnotes:

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

[2] National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth-highest eight-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the EPA for further clarification and current federal policies.

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

[4] Any equivalent procedure which can be shown to the satisfaction of ARB to give equivalent results at or near the level of the air quality standard may be used.

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

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

[7] Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.

[8] 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 0.100 ppm (effective January 22, 2010). Note that the EPA standards are in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national standards to the California standards, the units can be converted from ppb to ppm. In this case, the national standards of 53 ppb and 100 ppb are identical to 0.053 ppm and 0.100 ppm, respectively.

[9] On June 2, 2010, the EPA established a new 1-hour SO_2 standard, effective August 23, 2010, which is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. The EPA also proposed a new automated Federal Reference Method (FRM) using ultraviolet technology, but will retain the older pararosaniline methods until the new FRM has adequately permeated State monitoring networks. The EPA also revoked both the existing 24-hour SO_2 standard of 0.14 ppm and the annual primary SO_2 standard of 0.030 ppm, effective August 23, 2010. The secondary SO_2 standard was not revised at this time; however, the secondary standard is undergoing a separate review by the EPA. Note that the new standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the new primary national standard to the California standard, the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

[10] 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.

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

°C = degrees Celsius
EPA = United States Environmental Protection Agency
$\mu g/m^3$ = micrograms per cubic meter
mg/m^3 = milligrams per cubic meter
ppm = parts per million
ppb = parts per billion

- SO_2: 800 µg/m^3 (0.3 ppm), 24-hour average
- Particulates, measured as PM_{10}: 350 µg/m^3, 24-hour average

Table B lists the primary health effects and sources of common air pollutants. Because the concentration standards were set at a level that protects public health with an adequate margin of safety (EPA), these health effects will not occur unless the standards are exceeded by a large margin or for a prolonged period of time. State AAQS are more stringent than federal AAQS. Among the pollutants, O_3 and particulate matter ($PM_{2.5}$ and PM_{10}) are considered regional pollutants, while the others have more localized effects.

Table B: Summary of Health Effects of the Major Criteria Air Pollutants

Pollutant	Health Effects	Examples of Sources
Particulate matter (PM_{10}: less than or equal to 10 microns)	• Increased respiratory disease • Lung damage • Premature death	• Cars and trucks, especially diesels • Fireplaces, wood stoves • Windblown dust from roadways, agriculture, and construction
Ozone (O_3)	• Breathing difficulties • Lung damage	• Formed by chemical reactions of air pollutants in the presence of sunlight; common sources are motor vehicles, industries, and consumer products
Carbon monoxide (CO)	• Chest pain in heart patients • Headaches, nausea • Reduced mental alertness • Death at very high levels	• Any source that burns fuel such as cars, trucks, construction and farming equipment, and residential heaters and stoves
Nitrogen dioxide (NO_2)	• Lung damage	• See CO sources
Toxic air contaminants	• Cancer • Chronic eye, lung, or skin irritation • Neurological and reproductive disorders	• Cars and trucks, especially diesels • Industrial sources such as chrome platers • Neighborhood businesses such as dry cleaners and service stations • Building materials and products

Source: ARB 2005.
ARB = California Air Resources Board

The California Clean Air Act (CCAA) provides the SCAQMD and other air districts with the authority to manage transportation activities at indirect sources. Indirect sources of pollution are generated when minor sources collectively emit a substantial amount of pollution. Examples of this would be the motor vehicles at an intersection, a mall, and on highways. The SCAQMD also regulates stationary sources of pollution throughout its jurisdictional area. Direct emissions from motor vehicles are regulated by the ARB.

Climate/Meteorology. Air quality in the planning area is not only affected by various emission sources (mobile, industry, etc.), but also by atmospheric conditions such as wind speed, wind direction, temperature, rainfall, etc. The combination of topography, low mixing height, abundant sunshine, and

emissions from the second largest urban area in the United States gives the Basin the worst air pollution problem in the nation.

The annual average temperature varies little throughout the Basin, ranging from the low to middle 60s, measured in degrees Fahrenheit (°F). With a more pronounced oceanic influence, coastal areas show less variability in annual minimum and maximum temperatures than inland areas. The climatological station closest to the site is the San Bernardino station.[1] The monthly average maximum temperature recorded at this station in the past ranged from 66.2°F in January to 96.2°F in July and August, with an annual average maximum of 79.9°F. The monthly average minimum temperature recorded at this station ranged from 38.5°F in January to 59.4°F in August, with an annual average minimum of 48.2°F. January is typically the coldest month, and August is typically the warmest month in this area of the Basin.

The majority of annual rainfall in the Basin occurs between November and April. Summer rainfall is minimal and is generally limited to scattered thundershowers in coastal regions and slightly heavier showers in the eastern portion of the Basin and along the coastal side of the mountains. The San Bernardino station monitored precipitation from 1893 to 2004 and is still representative of the area precipitation. Average monthly rainfall measured during that period varied from 3.25 inches in February to 0.71 inch or less between May and October, with an annual total of 16.12 inches. Patterns in monthly and yearly rainfall totals are unpredictable due to fluctuations in the weather.

The Basin experiences a persistent temperature inversion (increasing temperature with increasing altitude) as a result of the Pacific high. This inversion limits the vertical dispersion of air contaminants, holding them relatively near the ground. As the sun warms the ground and the lower air layer, the temperature of the lower air layer approaches the temperature of the base of the inversion (upper) layer until the inversion layer finally breaks, allowing vertical mixing with the lower layer. This phenomenon is observed in mid-afternoon to late afternoon on hot summer days, when the smog appears to clear up suddenly. Winter inversions frequently break by midmorning.

Winds in the vicinity of the project area blow predominantly from the south-southwest, with relatively low velocities. Wind speeds in the project area average about 4 miles per hour (mph). Summer wind speeds average slightly higher than winter wind speeds. Low average wind speeds, together with a persistent temperature inversion limit the vertical dispersion of air pollutants throughout the Basin. Strong, dry, north or northeasterly winds, known as Santa Ana winds, occur during the fall and winter months, dispersing air contaminants. The Santa Ana conditions tend to last for several days at a time.

The combination of stagnant wind conditions and low inversions produces the greatest pollutant concentrations. On days of no inversion or high wind speeds, ambient air pollutant concentrations are the lowest. During periods of low inversions and low wind speeds, air pollutants generated in urbanized areas are transported predominantly on shore into Riverside and San Bernardino Counties. In the winter, the greatest pollution problems are CO and oxides of nitrogen (NO_X) because of extremely low inversions and air stagnation during the night and early morning hours. In the summer, the longer daylight hours and the brighter sunshine combine to cause a reaction between hydrocarbons and NO_X to form photochemical smog.

[1] Western Regional Climate Center, www.wrcc.dri.edu.

Air Pollution Constituents and Attainment Status. The ARB coordinates and oversees both State and federal air pollution control programs in California. The ARB oversees activities of local air quality management agencies and maintains air quality monitoring stations throughout the State in conjunction with the EPA and local air districts. The ARB has divided the State into 15 air basins based on meteorological and topographical factors of air pollution. Data collected at these stations are used by the ARB and EPA to classify air basins as attainment, nonattainment, nonattainment-transitional, or unclassified, based on air quality data for the most recent 3 calendar years compared with the AAQS. Nonattainment areas are imposed with additional restrictions as required by the EPA. The air quality data are also used to monitor progress in attaining air quality standards. Table C lists the attainment status for the criteria pollutants in the Basin.

Table C: Attainment Status of Criteria Pollutants in the South Coast Air Basin

Pollutant	State	Federal
O_3 1-hour	Nonattainment	N/A
O_3 8-hour	Nonattainment	Extreme Nonattainment
PM_{10}	Nonattainment	Serious Nonattainment
$PM_{2.5}$	Nonattainment	Nonattainment
CO	Attainment	Attainment/Maintenance
NO_2	Nonattainment	Attainment/Maintenance
SO_2	Attainment	Attainment
Lead	Attainment[1]	Attainment[1]
All others	Attainment/Unclassified	Attainment/Unclassified

Source: ARB 2012 (http://www.arb.ca.gov/desig/desig.htm).
[1] Except in Los Angeles County.
ARB = California Air Resources Board
CO = carbon monoxide
N/A = not applicable
NO_2 = nitrogen dioxide
O_3 = ozone
PM_{10} = particulate matter less than 10 microns in diameter
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
SO_2 = sulfur dioxide

Ozone. O_3 (smog) is formed by photochemical reactions between oxides of nitrogen and reactive organic gases (ROGs) rather than being directly emitted. O_3 is a pungent, colorless gas typical of Southern California smog. Elevated O_3 concentrations result in reduced lung function, particularly during vigorous physical activity. This health problem is particularly acute in sensitive receptors such as the sick, the elderly, and young children. O_3 levels peak during summer and early fall. The entire Basin is designated as a nonattainment area for the State 1-hour and 8-hour O_3 standards. The EPA has officially designated the status for most of the Basin regarding the 8-hour O_3 standard as "Extreme," which means the Basin has until 2024 to attain the federal 8-hour O_3 standard.

Carbon Monoxide. CO is formed by the incomplete combustion of fossil fuels, almost entirely from automobiles. It is a colorless, odorless gas that can cause dizziness, fatigue, and impairments to central nervous system functions. The entire Basin is in attainment for the State standards for CO. The Basin is designated as an "Attainment/Maintenance" area under the federal CO standards.

Nitrogen Oxides. NO_2, a reddish brown gas, and nitric oxide (NO), a colorless, odorless gas, are formed from fuel combustion under high temperature or pressure. These compounds are referred to as nitrogen oxides, or NO_X. NO_X is a primary component of the photochemical smog reaction. It also contributes to other pollution problems, including a high concentration of fine particulate matter, poor visibility, and acid deposition (i.e., acid rain). NO_2 decreases lung function and may reduce resistance to infection. The entire Basin is designated as nonattainment for the State NO_2 standard and as an "Attainment/Maintenance" area under the federal NO_2 standard.

Sulfur Dioxide. SO_2 is a colorless irritating gas formed primarily from incomplete combustion of fuels containing sulfur. Industrial facilities also contribute to gaseous SO_2 levels. SO_2 irritates the respiratory tract, can injure lung tissue when combined with fine particulate matter, and reduces visibility and the level of sunlight. The entire Basin is in attainment with both federal and State SO_2 standards.

Lead. Lead is found in old paints and coatings, plumbing, and a variety of other materials. Once in the blood stream, lead can cause damage to the brain, nervous system, and other body systems. Children are highly susceptible to the effects of lead. The Los Angeles County portion of the Basin was re-designated as nonattainment for the State and federal standards for lead in 2010.

Particulate Matter. Particulate matter (PM) is the term used for a mixture of solid particles and liquid droplets found in the air. Coarse particles (all particles less than or equal to 10 micrometers in diameter, or PM_{10}) derive from a variety of sources, including windblown dust and grinding operations. Fuel combustion and resultant exhaust from power plants and diesel buses and trucks are primarily responsible for fine particle (less than 2.5 microns in diameter, or $PM_{2.5}$) levels. Fine particles can also be formed in the atmosphere through chemical reactions. PM_{10} can accumulate in the respiratory system and aggravate health problems such as asthma. The EPA's scientific review concluded that $PM_{2.5}$, which penetrate deeply into the lungs, are more likely than coarse particles to contribute to the health effects listed in a number of recently published community epidemiological studies at concentrations that extend well below those allowed by the current PM_{10} standards. These health effects include premature death and increased hospital admissions and emergency room visits (primarily the elderly and individuals with cardiopulmonary disease); increased respiratory symptoms and disease (children and individuals with cardiopulmonary disease such as asthma); decreased lung functions (particularly in children and individuals with asthma); and alterations in lung tissue and structure and in respiratory tract defense mechanisms. Most of the Basin is designated nonattainment for the federal and State PM_{10} and $PM_{2.5}$ standards.

Reactive Organic Compounds. Reactive organic compounds (ROCs; also known as ROGs and volatile organic compounds [VOCs]) are formed from the combustion of fuels and the evaporation of organic solvents. ROCs are not defined as criteria pollutants, but are a prime component of the photochemical smog reaction. Consequently, ROC accumulates in the atmosphere more quickly during the winter when sunlight is limited and photochemical reactions are slower. There are no attainment designations for ROC.

Sulfates. Sulfates occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to SO_2 during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California due to regional meteorological features. The entire Basin is in attainment for the State standard for sulfates.

Hydrogen Sulfide. Hydrogen sulfide (H_2S) is a colorless gas with the odor of rotten eggs. It is formed during bacterial decomposition of sulfur-containing organic substances. Also, it can be present in sewer gas and some natural gas and can be emitted as the result of geothermal energy exploitation. In 1984, an ARB committee concluded that the ambient standard for H_2S is adequate to protect public health and to significantly reduce odor annoyance. The entire Basin is unclassified for the State standard for hydrogen sulfide.

Visibility-Reducing Particles. Visibility-reducing particles consist of suspended particulate matter, which is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size, and chemical composition, and can be made up of many different materials such as metals, soot, soil, dust, and salt. The statewide standard is intended to limit the frequency and severity of visibility impairment due to regional haze. The entire Basin is unclassified for the State standard for visibility-reducing particles.

3.1.2 Local Air Quality

SCAQMD, together with the ARB, maintains ambient air quality monitoring stations in the Basin. The air quality monitoring station closest to the site is the San Bernardino station. This station monitors most criteria pollutants, except SO_2. This monitoring station characterizes the air quality representative of the ambient air quality in the project area.[1] The closest monitoring station that monitors SO_2 is the Fontana-Arrow Highway station. Ambient air quality data in Table D show that CO, NO_2, and SO_2 levels are consistently below the relevant State and federal standards in the project vicinity. Ozone, PM_{10}, and $PM_{2.5}$ levels all exceed State and federal standards regularly.

[1] Air quality data, 2008–2010; EPA and ARB websites.

Table D: Ambient Air Quality Monitored at San Bernardino and Fontana-Arrow Highway Stations

Pollutant	Standard	2008	2009	2010
Carbon Monoxide (CO) – from San Bernardino Station				
Maximum 1-hr concentration (ppm)		2.2	2.0	2.1
Number of days exceeded:	State: > 20 ppm	0	0	0
	Federal: > 35 ppm	0	0	0
Maximum 8-hr concentration (ppm)		1.65	1.90	1.73
Number of days exceeded:	State: ≥ 9.0 ppm	0	0	0
	Federal: ≥ 9 ppm	0	0	0
Ozone (O_3) – from San Bernardino Station				
Maximum 1-hr concentration (ppm)		0.157	0.150	0.129
Number of days exceeded:	State: > 0.09 ppm	62	53	27
Maximum 8-hr concentration (ppm)		0.122	0.126	0.104
Number of days exceeded:	State: > 0.07 ppm	87	78	60
	Federal: > 0.075 ppm	62[1]	61	40
Coarse Particulates (PM_{10}) – from San Bernardino Station				
Maximum 24-hr concentration (µg/m^3)		144	89	63
Number of days exceeded:	State: > 50 µg/m3	17	10	2
	Federal: > 150 µg/m3	0	0	0
Annual arithmetic average concentration (µg/m^3)		37.3	32.7	32.4
Exceeded for the year:	State: > 20 µg/m^3	Yes	Yes	Yes
Fine Particulates ($PM_{2.5}$) – from San Bernardino Station				
Maximum 24-hr concentration (µg/m^3)		43.5	37.8	39.3
Number of days exceeded:	Federal: > 35 µg/m^3	3[3]	2	2
Annual arithmetic average concentration (µg/m^3)		13.3	12.9	11.1
Exceeded for the year:	State: > 12 µg/m3	Yes	Yes	No
	Federal: > 15 µg/m3	No	No	No
Nitrogen Dioxide (NO_2) – from San Bernardino Station				
Maximum 1-hr concentration (ppm)		0.091	0.084	0.069
Number of days exceeded:	State: > 0.18 ppm	0	0	0
Annual arithmetic average concentration (ppm)		0.022	0.020	0.019
Exceeded for the year:	State: > 0.030 ppm	No	No	No
	Federal: > 0.053 ppm	No	No	No
Sulfur Dioxide (SO_2) – from Fontana-Arrow Highway Station				
Maximum 24-hr concentration (ppm)		0.003	0.002	0.002
Number of days exceeded:	State: > 0.04 ppm	0	0	0
	Federal: > 0.14 ppm	0	0	0
Annual arithmetic average concentration (ppm)		0.001	0.000	0.000
Exceeded for the year:	Federal: > 0.030 ppm	No	No	No

Sources: EPA and ARB websites: www.epa.gov/air/data/index.html and www.arb.ca.gov/adam/welcome.html.

[1] The exceedances of the federal 8-hour O_3 standard are based on the old 0.08 ppm standard. In April 2008, the EPA revised the standard to 0.075 ppm.

[2] No data available.

[3] The exceedances of the federal 24-hour $PM_{2.5}$ standard are based on the old 65 µg/m^3 standard. In 2006, the EPA revised the standard to 35 µg/m^3.

µg/m^3 = micrograms per cubic meter
ARB = California Air Resources Board
EPA = United States Environmental Protection Agency
ppm = parts per million

3.1.3 Regulatory Settings

Federal Regulations/Standards. Pursuant to the federal Clean Air Act (CAA) of 1970, the EPA established national ambient air quality standards (NAAQS). The NAAQS were established for six major pollutants, termed "criteria" pollutants. Criteria pollutants are defined as those pollutants for which the federal and State governments have established AAQS, or criteria, for outdoor concentrations in order to protect public health.

Data collected at permanent monitoring stations are used by the EPA to classify regions as "attainment" or "nonattainment," depending on whether the regions met the requirements stated in the primary NAAQS. Nonattainment areas are imposed with additional restrictions as required by the EPA.

The EPA has designated the SCAG as the Metropolitan Planning Organization (MPO) responsible for ensuring compliance with the requirements of the CAA for the Basin.

The EPA established new national air quality standards for ground-level O_3 and fine particulate matter in 1997. On May 14, 1999, the Court of Appeals for the District of Columbia Circuit issued a decision ruling that the CAA, as applied in setting the new public health standards for O_3 and particulate matter, was unconstitutional as an improper delegation of legislative authority to the EPA. On February 27, 2001, the U.S. Supreme Court upheld the way the government sets air quality standards under the CAA. The court unanimously rejected industry arguments that the EPA must consider financial cost as well as health benefits in writing standards. The justices also rejected arguments that the EPA took too much lawmaking power from Congress when it set tougher standards for O_3 and soot in 1997. Nevertheless, the court threw out the EPA's policy for implementing new O_3 rules, saying that the agency ignored a section of the law that restricts its authority to enforce such rules.

In April 2003, the EPA was cleared by the White House Office of Management and Budget (OMB) to implement the 8-hour ground-level O_3 standard. The EPA issued the proposed rule implementing the 8-hour O_3 standard in April 2003. The EPA completed final 8-hour nonattainment status on April 15, 2004. The EPA revoked the 1-hour O_3 standard on June 15, 2005, and lowered the 8-hour O_3 standard from 0.08 ppm to 0.075 ppm on April 1, 2008.

The EPA issued the final $PM_{2.5}$ implementation rule in fall 2004. The EPA lowered the 24-hour $PM_{2.5}$ standard from 65 to 35 $\mu g/m^3$ and revoked the annual PM_{10} standard on December 17, 2006. The EPA issued final designations for the 2006 24-hour $PM_{2.5}$ standard on December 12, 2008.

State Regulations/Standards. In 1967, the California Legislature passed the Mulford-Carrell Act, which combined two Department of Health bureaus, the Bureau of Air Sanitation and the Motor Vehicle Pollution Control Board, to establish ARB. Since its formation, ARB has worked with the public, the business sector, and local governments to find solutions to California's air pollution problems.

The ARB identified particulate emissions from diesel-fueled engines (diesel particulate matter [DPM]) as toxic air contaminants (TACs) in August 1998. Following the identification process, ARB was

required by law to determine whether there is a need for further control. In September 2000, the ARB adopted the Diesel Risk Reduction Plan (Diesel RRP), which recommends many control measures to reduce the risks associated with DPM and to achieve goals of 75 percent DPM reduction by 2010 and 85 percent by 2020.

Regional Air Quality Planning Framework. The 1976 Lewis Air Quality Management Act established the SCAQMD and other air districts throughout the State. The federal CAA Amendments of 1977 required that each state adopt an implementation plan outlining pollution control measures to attain the federal standards in nonattainment areas of the state.

The ARB is responsible for incorporating air quality management plans for local air basins into a State Implementation Plan (SIP) for EPA approval. Significant authority for air quality control within them has been given to local air districts that regulate stationary source emissions and develop local nonattainment plans.

Regional Air Quality Management Plan. The SCAQMD and the SCAG are responsible for formulating and implementing the AQMP for the Basin. Every 3 years the SCAQMD prepares a new AQMP, updating the previous plan and having a 20-year horizon. The SCAQMD adopted the 2003 AQMP in August 2003 and forwarded it to ARB for review and approval. The ARB approved a modified version of the 2003 AQMP and forwarded it to the EPA in October 2003 for review and approval.

The 2003 AQMP updates the attainment demonstration for the federal standards for O_3 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 NO_2 standard that the Basin has met since 1992.

The 2003 AQMP proposes policies and measures to achieve federal and state standards for healthful air quality in the Basin and those portions of the Salton Sea Air Basin (formerly named the Southeast Desert Air Basin) that are under District jurisdiction (namely, Coachella Valley). The Coachella Valley PM_{10} Plan was revised in June 2002 and forwarded to the ARB and EPA for approval. The EPA approved the 2002 Coachella Valley SIP on April 18, 2003.

This revision to the AQMP also addresses several state and federal planning requirements and incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. This AQMP is consistent with and builds upon the approaches taken in the 1997 AQMP and the 1999 Amendments to the O_3 SIP for the South Coast Air Basin for the attainment of the federal O_3 air quality standard. However, this revision points to the urgent need for additional emission reductions (beyond those incorporated in the 1997/99 Plan) to offset increased emission estimates from mobile sources and meet all federal criteria pollutant standards within the time frames allowed under the federal CAA.

The SCAQMD adopted the 2007 AQMP on June 1, 2007, which it describes as a regional and multiagency effort (the SCAQMD Governing Board, ARB, SCAG, and EPA). An inventory of

existing emissions from industrial facilities is included in the baseline inventory in the 2007 AQMP. The 2007 AQMP also identifies emission reductions from existing sources and air pollution control measures that are necessary in order to comply with applicable state and federal ambient air quality standards. State and federal planning requirements will include developing control strategies, attainment demonstration, reasonable further progress, and maintenance plans. The 2007 AQMP also incorporates significant new scientific data, primarily in the form of updated emission inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. The ARB has adopted the SCAQMD 2007 AQMP as part of the 2007 SIP and forwarded it to the EPA for review and approval. On November 22, 2010, the EPA published its notice of proposed partial approval and partial disapproval of the 2007 AQMP $PM_{2.5}$ Plan primarily because the attainment demonstration relies heavily on emissions reductions from several State rules that have not been finalized or submitted to the EPA for approval. The proposed revision to the $PM_{2.5}$ and ozone SIP addresses the critical issues of the proposed disapproval. It updates the implementation status of the AQMP control measures to meet the 2015 $PM_{2.5}$ attainment, retains the SCAQMD's proposal for contingency measures, and also references and relies on ARB's proposed contingency measures. In addition, the SIP revision will reinitiate its request that the EPA voluntarily accept reduction responsibility for 10 TPD NO_X emissions in 2014 but will propose that SCAQMD and ARB jointly provide a "fair-share" backstop emissions reduction proposal, if necessary. As of March 4, 2011, SCAQMD is proposing to submit a revision to the $PM_{2.5}$ and ozone SIP to update the implementation status of the SCAQMD control measures to meet the 2015 $PM_{2.5}$ attainment, revisions to the control measure adoption schedule, and modifications to the emissions reduction commitment to reflect changes made to the inventory resulting from ARB's December 2010 revisions to the on-road truck and off-road equipment rules. The SIP revision retains the SCAQMD's proposal for contingency measures and also references and relies on ARB's proposed contingency measures.

4.0 THRESHOLDS AND METHODOLOGY

A number of modeling tools are available to assess air quality impacts of projects. In addition, certain air districts, such as the SCAQMD, have created guidelines and requirements to conduct air quality analysis. SCAQMD's current guidelines, *CEQA Air Quality Handbook, April 1993* and associated updates, were adhered to in the assessment of air quality impacts for the proposed project. The air quality models identified in the document (including an older version of the URBEMIS model) are outdated; therefore, the SCAQMD recently released model, CalEEMod Version 2011.1.1, was used to estimate project-related mobile and stationary sources emissions in this Air Quality Analysis.

The Air Quality Analysis includes estimated emissions associated with short-term construction and long-term operation of the proposed project. Criteria pollutants with regional impacts would be emitted by project-related vehicular trips, as well as by emissions associated with stationary sources used on site. Localized air quality impacts, i.e., higher CO concentrations (CO hot spots) near intersections or roadway segments in the project vicinity, would be small and less than significant due to the generally low ambient CO concentrations (2.2 ppm for the 1-hour period and 1.9 ppm for the 8-hour period) in the project area.

The net increase in pollutant emissions determines the significance and impact on regional air quality as a result of the proposed project. The results also allow the local government to determine whether the proposed project will deter the region from achieving the goal of reducing pollutants in accordance with the AQMP in order to comply with federal and State AAQS.

4.1 THRESHOLDS OF SIGNIFICANCE

Based on *Guidelines for the Implementation of CEQA*, Appendix G, Public Resource Code (PRC) Sections 15000–15387, a project would normally be considered to have a significant effect on air quality if the project would violate any ambient air quality standards, contribute substantially to an existing air quality violation, expose sensitive receptors to substantial pollutants concentrations, or conflict with adopted environmental plans and goals of the community in which it is located.

In addition to the federal and State AAQS, there are daily emissions thresholds for construction and operation of a proposed project in the Basin. The Basin is administered by the SCAQMD, and guidelines and emissions thresholds established by the SCAQMD in its CEQA Air Quality Handbook (SCAQMD, April 1993) are used in this analysis. It should be noted that the emissions thresholds were established based on the attainment status of the air basin in regard to air quality standards for specific criteria pollutants. Because the concentration standards were set at a level that protects public health with an adequate margin of safety (EPA), these emissions thresholds are regarded as conservative and would overstate an individual project's contribution to health risks.

4.1.1 Regional Thresholds for Construction Emissions

The following CEQA significance thresholds for construction emissions have been established for the Basin:

- 75 pounds per day (lbs/day) of ROC
- 100 lbs/day of NO_X
- 550 lbs/day of CO
- 150 lbs/day of PM_{10}
- 55 lbs/day of $PM_{2.5}$
- 150 lbs/day of SO_2

Projects in the Basin with construction-related emissions that exceed any of the emission thresholds are considered to be significant under the SCAQMD guidelines.

4.1.2 Regional Thresholds for Operational Emissions

The daily operational emissions "significance" thresholds for the Basin are as follows.

- 55 lbs/day of ROC
- 55 lbs/day of NO_X
- 550 lbs/day of CO
- 150 lbs/day of PM_{10}
- 55 lbs/day of $PM_{2.5}$
- 150 lbs/day of SO_2

Local Microscale Concentration Standards. The significance of localized project impacts under CEQA depends on whether ambient CO levels in the vicinity of the project are above or below State and federal CO standards. If ambient levels are below the standards, a project is considered to have a significant impact if project emissions result in an exceedance of one or more of these standards. If ambient levels already exceed a State or federal standard, project emissions are considered significant if they increase 1-hour CO concentrations by 1.0 ppm or more or 8-hour CO concentrations by 0.45 ppm or more. The following are applicable local emission concentration standards for CO:

- California State 1-hour CO standard of 20.0 ppm
- California State 8-hour CO standard of 9.0 ppm

4.1.3 Thresholds for Localized Significance

The SCAQMD published its *Final Localized Significance Threshold Methodology* in June 2003, recommending that all air quality analyses include an assessment of both construction and operational impacts on the air quality of nearby sensitive receptors. LSTs represent the maximum emissions from a project site that are not expected to result in an exceedance of the national or State AAQS, as previously shown in Table A. LSTs are based on the ambient concentrations of that pollutant within the project Source Receptor Area (SRA) and the distance to the nearest sensitive receptor. For this project, the appropriate SRA for the LST is the Central San Bernardino Valley area.

In the case of CO and $N0_2$, if ambient levels are below the standards, a project is considered to have a significant impact if project emissions result in an exceedance of one or more of these standards. If ambient levels already exceed a State or federal standard, then project emissions are considered significant if they increase ambient concentrations by a measurable amount. This would apply to PM_{10} and $PM_{2.5}$, both of which are non-attainment pollutants. For these two, the significance criteria are the pollutant concentration thresholds presented in SCAQMD Rules 403 and 1301. The Rule 403 threshold of 10.4 micrograms per cubic meter applies to construction emissions (and may apply to operational emissions at aggregate handling facilities). The Rule 1301 threshold of 2.5 micrograms per cubic meter applies to non-aggregate handling operational activities.

To avoid the need for every air quality analysis to perform air dispersion modeling, the SCAQMD performed air dispersion modeling for a range of construction sites less than or equal to 5 ac in size and created look-up tables that correlate pollutant emissions rates with project size to screen out projects that are unlikely to generate enough emissions to result in a locally significant concentration of any criteria pollutant. These look-up tables can also be used as screening criteria for larger projects to determine whether or not dispersion modeling may be required.

For this project, the appropriate Source Receptor Area (SRA) is the Central San Bernardino Valley.[1] Sensitive receptors include residences, schools, hospitals, and similar uses that are sensitive to adverse air quality. Adjacent development in the project vicinity includes uses such as the existing warehouse facility. Other development in the area includes existing residences, approximately 50 ft to the south, and existing residential uses approximately 400 ft to the east.

Although the site is approximately 14.46 ac in size, construction emissions from the southern 5 ac would result in the highest risk potential. Therefore, using the SCAQMD screening LST thresholds would show the worst case scenario and a more conservative result. Although there are existing residences to the south that are approximately 50 feet (15 meters [m]) from the project boundary, the SCAQMD has suggested that the minimum distance for LST analysis is 25 m. Therefore, construction LST thresholds for a 5 ac site in the Central San Bernardino Valley SRA at 25 m (or 82 ft), the minimum distance recommended by the SCAQMD for LST analysis, are used and they are as follows:

- 276 lbs/day of NO_X
- 1,876 lbs/day of CO
- 20 lbs/day of PM_{10}

[1] www.aqmd.gov/ceqa/handbook/LST/LST.html.

- 8.4 lbs/day of $PM_{2.5}$

For operational emissions, the localized significance for a project larger than 5 ac can be determined by performing the screening-level analysis before using the dispersion modeling because the screening-level analysis is more conservative, and if no exceedance of the screening-level thresholds is identified, then the chance of operational LST exceeding concentration standards is small. Therefore, for a conservative approach, the LST screening thresholds for 5 ac are used in this analysis for operational emissions. Since the project is not an aggregate handling facility, operational LSTs are assessed with the SCAQMD screening thresholds.

The nearest residences to the south are located approximately 300 ft to the middle of the dock doors on the south side of the building, and this distance is used in the LST analysis. Operational thresholds for a 5 ac site in the Central San Bernardino Valley SRA at 91 m (or 300 ft), the minimum distance recommended by the SCAQMD for LST analysis:

- 364 lbs/day of NO_X
- 3,828 lbs/day of CO
- 15 lbs/day of PM_{10}
- 4.6 lbs/day of $PM_{2.5}$

5.0 IMPACTS AND MITIGATION

Air pollutant emissions associated with the project would occur over the short term from construction activities, such as fugitive dust from site preparation and grading, and emissions from equipment exhaust. There would be long-term regional emissions associated with project-related vehicular trips. Long-term local CO emissions at intersections in the project vicinity would not be significantly affected by project-related traffic. Long-term stationary source emissions would occur due to energy consumption such as electricity usage by the proposed land uses.

5.1 CONSTRUCTION IMPACTS

5.1.1 Equipment Exhausts and Related Construction Activities

Construction activities produce combustion emissions from various sources such as site grading, utility engines, on-site heavy-duty construction vehicles, asphalt paving, and motor vehicles transporting the construction crew. Exhaust emissions from construction activities envisioned on site would vary daily as construction activity levels change. The use of construction equipment on site would result in localized exhaust emissions. Table E lists the anticipated construction schedule for the proposed project. Table F lists the anticipated diesel equipment to be used for each phase.

Table E: Construction Schedule

Phase Name	Phase Start Date	Phase End Date	Number of Days/Week	Number of Days
Demolition	06/01/2012	06/28/2012	5	20
Site Preparation	06/29/2012	07/12/2012	5	10
Grading	07/13/2012	08/23/2012	5	30
Building Construction	08/24/2012	10/17/2013	5	300
Architectural Coating	02/01/2013	10/17/2013	5	185
Paving	10/18/2013	11/14/2013	5	20

Table F: Diesel Construction Equipment Utilized by Construction Phase

Construction Phase	Off-Road Equipment Type	Off-Road Equipment Unit Amount	Hours Used per Day	Horsepower	Load Factor
Demolition	Concrete/Industrial Saws	1	8	81	0.73
	Excavators	3	8	157	0.57
	Rubber Tired Dozers	2	8	358	0.59
Site Preparation	Rubber Tired Dozers	3	8	358	0.59
	Tractors/Loaders/Backhoes	4	8	75	0.55
Grading	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
Building Construction	Cranes	1	7	208	0.43
	Forklifts	3	8	149	0.3
	Generator Sets	1	8	84	0.74
	Tractors/Loaders/Backhoes	3	7	75	0.55
	Welders	1	8	46	0.45
Architectural Coating	Air Compressors	1	6	78	0.48
Paving	Pavers	2	8	89	0.62
	Paving Equipment	2	8	82	0.53
	Rollers	2	8	84	0.56

Source: CalEEMod Defaults.

The most recent version of the CalEEMod model (version 2011.1.1), was used to calculate the construction emissions, as shown in Table G. The emissions rates shown in Table G are from the CalEEMod output tables listed as “Mitigated Construction,” even though the only mitigation measures that have been applied to the analysis are the required construction emissions control measures. They are also the combination of the on- and off-site emissions. As shown in Table G, as long as none of the construction phases overlap, all construction equipment/vehicle emissions of criteria pollutants would remain below their respective SCAQMD emission thresholds. Some of the construction phases could overlap without any exceedances, such as the Building Construction and the Architectural Coating or the Architectural Coating and Paving. Details of the emission factors and other assumptions are included in Appendix A.

Table G: Short-Term Regional Construction Emissions

Construction Phase	Total Regional Pollutant Emissions, lbs/day								
	ROG	**NO_X**	**CO**	**SO_2**	**Fugitive PM_{10}**	**Exhaust PM_{10}**	**Fugitive $PM_{2.5}$**	**Exhaust $PM_{2.5}$**	**CO_2e**
Demolition	11	89	52	0.09	13	4.4	0.07	4.4	9,600
Site Preparation	11	85	49	0.07	7.3	4.3	3.9	4.3	8,200
Grading	8.9	72	41	0.07	3.2	3.6	1.3	3.6	7,600
Building Construction	7.5	49	41	0.07	2.8	3.0	0.12	3.0	7,400
Architectural Coating	44[1]	3.2	4.1	0	0.45	0.28	0.02	0.28	600
Paving	6.5	34	22	0.03	0.23	2.9	0.01	2.9	3,100
Phase Overlap Max	52	52	45	0.07	3.2	3.2	0.14	3.2	8,000
SCAQMD Thresholds	**75**	**100**	**550**	**150**	**150**		**55**		**No Threshold**
Significant Emissions?	**No**	**No**	**No**	**No**	**No**		**No**		

Source: LSA Associates, Inc., February 2012.
[1] Assumes architectural coating applied using high volume-low pressure (HVLP) equipment.

CO = carbon monoxide
CO_2 = carbon dioxide
CO_{2e} = carbon dioxide equivalent
lbs/day = pounds per day
NO_x = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
ROG = reactive organic compounds
SCAQMD = South Coast Air Quality Management District
SO_x = sulfur oxides

5.1.2 Fugitive Dust

Fugitive dust emissions are generally associated with land clearing and exposure of soils to the air and wind, and cut-and-fill grading operations. Dust generated during construction varies substantially on a project-by-project basis, depending on the level of activity, the specific operations, and weather conditions at the time of construction.

Construction emissions can vary greatly depending on the level of activity, the specific operations taking place, the equipment being operated, local soils, weather conditions, and other factors. The proposed project will be required to comply with SCAQMD Rules 402 and 403 to control fugitive dust. Table G lists total construction emissions, i.e., fugitive-dust emissions and construction-equipment exhausts that have incorporated a number of feasible control measures that can be reasonably implemented to significantly reduce PM_{10} emissions from construction. Table G shows that during all construction phases, daily total construction emissions with standard control measures would be below the daily thresholds established by the SCAQMD.

5.1.3 Architectural Coatings

Architectural coatings, carpet systems, composite wood products, and resilient flooring contain VOCs that are similar to ROCs and are part of the O_3 precursors. There will be industrial buildings proposed for the project. Based on the proposed project, it is estimated that the proposed industrial buildings will result in approximately 49 lbs of VOC per day during the coating phase. These emissions would occur after grading activities, near the end of the construction period. Therefore, this VOC emission is the principal air emission and is less than the SCAQMD VOC threshold of 75 lbs/day.

Emissions associated with architectural coatings could be reduced by using precoated/natural-colored building materials, using water-based or low-VOC coating, and using coating transfer or spray equipment with high transfer efficiency. For example, a high-volume, low-pressure (HVLP) spray method is a coating application system operated at air pressure between 0.1 and 10 pounds per square inch gauge (psig), with 65 percent transfer efficiency. Manual applications such as paintbrush, hand roller, trowel, spatula, dauber, rag, or sponge have 100 percent transfer efficiency.

Emissions associated with carpet systems, composite wood products, and resilient flooring could be reduced by for example using natural, rapidly renewable materials. Emissions can be minimized by adherence to the California Green Building Code 2010, Pollutant Control Section.

5.1.4 Localized Significance Analysis

The SCAQMD has issued guidance on applying CalEEMod modeling results to LST analyses[1]. Since CalEEMod calculates construction emissions based on the number of equipment hours and the maximum daily soil disturbance activity possible for each piece of equipment, Table H has been provided by the SCAQMD to determine the maximum daily disturbed-acreage for comparison to LSTs.

Table H: Equipment Specific Grading Rates

Equipment Type	Acres/8-hr-day
Crawler Tractor	0.5
Graders	0.5
Rubber Tired Dozers	0.5
Scrapers	1

Source: CalEEMod User Guide Appendix A.
hr = hour

As shown in Table G, the site preparation and grading phases have greater daily emissions than other phases. Table F shows 3 rubber-tired dozers in use during the site preparation phase and 1 grader, 1 rubber-tired dozer and 1 scraper during the grading phase (the equipment described as "tractor/loader/backhoe" in Table F is not the same as the "Crawler Tractor" listed in Table H). Based on Table H, the proposed project will result in a maximum of 1.5 ac disturbed daily during the site preparation phase and 3.0 ac disturbed daily during the grading phase. Thus, screening level LSTs for a 5 ac site at 100 ft distance are used for the project.

[1] From the SCAQMD website - www.aqmd.gov/ceqa/handbook/lst/CalEEModguidance.pdf.

Table I: Construction LST Impacts

Emissions Sources	NO_X	CO	PM_{10}	$PM_{2.5}$
On-site Emissions	85	48	11	8.1
LST Thresholds	**276**	**1,876**	**20**	**8.4**
Significant Emissions?	**No**	**No**	**No**	**No**

Source: LSA Associates, Inc., February 2012.
SRA: Central San Bernardino Valley, 5 acres, 30 meters distance,
CO = carbon monoxide
lbs/day = pounds per day
LST = local significance threshold
NO_X = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size

Table I shows that the emissions of these pollutants on the peak day of construction will not result in concentrations of pollutants at nearby residences or other sensitive receptors that are at or above the SCAQMD thresholds of significance.

5.1.5 Odors

Heavy-duty equipment in the project area during construction would emit odors. However, the construction activity would cease to occur after individual construction is completed. No other sources of objectionable odors have been identified for the proposed project, and no mitigation measures are required.

SCAQMD Rule 402 regarding nuisances states: "A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property." The proposed uses are not anticipated to emit any objectionable odors. Therefore, objectionable odors posing a health risk to potential on-site and existing off-site uses would not occur as a result of the proposed project.

5.1.6 Naturally Occurring Asbestos

The proposed project is located in San Bernardino County. San Bernardino County is not among the counties that are found to have serpentine and ultramafic rock in their soils. Therefore, the potential risk for naturally occurring asbestos (NOA) during project construction is small and less than significant.

5.2 LONG-TERM REGIONAL AIR QUALITY IMPACTS

5.2.1 Long-Term Project Operational Emissions

Long-term air pollutant emission impacts are those associated with stationary sources and mobile sources involving any project-related changes. The proposed project would result in a net increase in

both stationary and mobile source emissions. The stationary source emissions would come from additional natural gas consumption for on-site buildings and electricity for the lighting in the buildings and at the parking area. Based on trip generation factors included in the traffic study and in the Institute of Transportation Engineers' (ITE) *Trip Generation Manual, Eighth Edition*, which is the default trip generation factors included in the CalEEMod model, long-term operational emissions associated with the proposed project, calculated with the CalEEMod model, are shown in Table J. Area sources include architectural coatings, consumer products, hearth, and landscaping. Energy sources include natural gas consumption for heating. Table J shows that the increase of all criteria pollutants as a result of the proposed project would be less than the corresponding SCAQMD daily emission thresholds. Therefore, project-related long-term air quality impacts would not be significant. Mitigation measures would not be required.

Table J: Long-Term Regional Operational Emissions

	Pollutant Emissions, lbs/day					
Source	**ROG**	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Area Sources	9.1	0	0	0	0	0
Energy Sources	0.02	0.2	0.17	0	0.02	0.02
Mobile Sources	8.0	47	74	0.14	17	2.6
Total Project Emissions	**17**	**47**	**74**	**0.14**	**17**	**2.6**
SCAQMD Thresholds	**55**	**55**	**550**	**150**	**150**	**55**
Significant?	**No**	**No**	**No**	**No**	**No**	**No**

Source: LSA Associates, Inc., February 2012.
CO = carbon monoxide
CO_2 = carbon dioxide
lbs/day = pounds per day
NO_x = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
ROCs = reactive organic compounds
SCAQMD = South Coast Air Quality Management District
SO_x = sulfur oxides

5.2.2 Localized Significance Analysis

Table K shows the calculated emissions for the proposed operational activities compared with the appropriate LSTs. The LST analysis only includes on-site sources; however, the CalEEMod model outputs do not separate on-site and off-site emissions for mobile sources. For a worst-case scenario assessment, the emissions shown in Table K include all on-site project-related stationary sources and 5 percent of the project-related new mobile sources, which is an estimate of the amount of project-related new vehicle traffic that will occur on site. Considering the total trip length included in the CalEEMod model, the 5 percent assumption is conservative.

Table K shows that the operational emission rates would not exceed the LST thresholds for the nearest sensitive receptors at 300 ft. Therefore, the proposed operational activity would not result in a localized significant air quality impact.

Table K: Long-Term Operational LST numbers

Emissions sources	NO_X	CO	PM_{10}	$PM_{2.5}$
Onsite emissions	2.4	3.7	0.85	0.13
LST Thresholds	**364**	**3,828**	**15.0**	**5.0**
Significant Emissions?	**No**	**No**	**No**	**No**

Source: LSA Associates, Inc., February 2012.
SRA: Central San Bernardino Valley, 5 acres, 300 foot distance, onsite traffic 5 percent of total
CO = carbon monoxide
lbs/day = pounds per day
NO_X = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size

5.3 LONG-TERM MICROSCALE (CO HOT SPOT) ANALYSIS

Vehicular trips associated with the proposed project would contribute to congestion at intersections and along roadway segments in the project vicinity. Localized air quality impacts would occur when emissions from vehicular traffic increase in local areas as a result of the proposed project. The primary mobile source pollutant of local concern is CO, which is a direct function of vehicle idling time and, thus, traffic flow conditions. CO transport is extremely limited; it disperses rapidly with distance from the source under normal meteorological conditions. However, under certain extreme meteorological conditions, CO concentrations proximate to a congested roadway or intersection may reach unhealthful levels affecting local sensitive receptors (residents, school children, the elderly, hospital patients, etc). Typically, high CO concentrations are associated with roadways or intersections operating at unacceptable levels of service or with extremely high traffic volumes. In areas with high ambient background CO concentrations, modeling is recommended to determine a project's effect on local CO levels.

An assessment of project-related impacts on localized ambient air quality requires that future ambient air quality levels be projected. Existing CO concentrations in the immediate project vicinity are not available. Ambient CO levels monitored at the San Bernardino Station, the closest station with complete monitored CO data, showed a highest recorded 1-hour concentration of 2.2 ppm (State standard is 20 ppm) and a highest 8-hour concentration of 1.9 ppm (State standard is 9 ppm) during the past 3 years (see Table E).

The highest CO concentrations would normally occur during peak traffic hours; hence, CO impacts calculated under peak traffic conditions represent a worst-case analysis. Because the ambient CO concentrations are much lower than the corresponding federal and State CO standards, the small amount of project-related new vehicular traffic is not expected to result in CO levels, when added to the low ambient CO levels that exceed the federal or State CO standards.

Tables L and M list the CO concentrations at five representative intersections in the project vicinity for the existing and year 2013 traffic conditions. All current and future CO concentrations at intersections in the project vicinity would be below the federal and State CO standards, and project-related increases would be 0.1 ppm or less. Because no CO hot spots would occur, the proposed project would not have a significant impact on local air quality for CO, and no mitigation measures would be required. Caline4 modeling output for this CO hot spot analysis is included in Appendix B.

Table L: Existing CO Concentrations Without and With Project Traffic

Intersection	Distance from Road Centerline to Maximum CO Concentration Without/With Project (Meters)	Without/With Project One-Hour CO Concentration (ppm)	Project Related One-Hour CO Concentration Increase (ppm)	Without/With Project Eight-Hour CO Concentration (ppm)	Project Related Eight-Hour CO Concentration Increase (ppm)	Exceeds State Standards	
						1-Hr (20 ppm)	8-Hr (9 ppm)
Waterman Avenue and Mill Street	14 / 14	3.3 / 3.3	0.0	2.6 / 2.6	0.0	No	No
	16 / 16	3.3 / 3.3	0.0	2.6 / 2.6	0.0	No	No
	14 / 14	3.3 / 3.3	0.0	2.6 / 2.6	0.0	No	No
	15 / 15	3.2 / 3.2	0.0	2.5 / 2.5	0.0	No	No
Waterman Avenue and Driveway 1	14 / 8	3.2 / 3.2	0.0	2.5 / 2.5	0.0	No	No
	7 / 14	3.1 / 3.2	0.1	2.5 / 2.5	0.0	No	No
	8 / 7	3.1 / 3.1	0.0	2.5 / 2.5	0.0	No	No
	7 / 7	3.1 / 3.1	0.0	2.5 / 2.5	0.0	No	No
Waterman Avenue and Driveway 2	8 / 8	3.3 / 3.3	0.0	2.6 / 2.6	0.0	No	No
	7 / 7	3.3 / 3.3	0.0	2.6 / 2.6	0.0	No	No
	10 / 10	3.3 / 3.3	0.0	2.6 / 2.6	0.0	No	No
	7 / 10	3.2 / 3.3	0.1	2.5 / 2.6	0.1	No	No
Waterman Avenue and Drake Street-Driveway 3	14 / 14	3.3 / 3.3	0.0	2.6 / 2.6	0.0	No	No
	8 / 8	3.2 / 3.2	0.0	2.5 / 2.5	0.0	No	No
	8 / 8	3.2 / 3.2	0.0	2.5 / 2.5	0.0	No	No
	14 / 14	3.2 / 3.2	0.0	2.5 / 2.5	0.0	No	No
Driveway 4 and Mill Street	7 / 7	2.8 / 2.8	0.0	2.3 / 2.3	0.0	No	No
	7 / 7	2.8 / 2.8	0.0	2.3 / 2.3	0.0	No	No
	10 / 10	2.8 / 2.8	0.0	2.3 / 2.3	0.0	No	No
	14 / 14	2.8 / 2.8	0.0	2.3 / 2.3	0.0	No	No

Source: LSA Associates, Inc., February 2012.
Includes ambient one-hour concentration of 2.3 ppm and ambient eight-hour concentration of 1.9 ppm. Measured at the 24302 4th St., San Bernardino, CA AQ Station in San Bernardino County.
CO = carbon monoxide Hr = hour ppm = parts per million

Table M: 2013 CO Concentrations Without and With Project Traffic

Intersection	Distance from Road Centerline to Maximum CO Concentration Without/With Project (Meters)	Without/With Project One-Hour CO Concentration (ppm)	Project Related One-Hour CO Concentration Increase (ppm)	Without/With Project Eight-Hour CO Concentration (ppm)	Project Related Eight-Hour CO Concentration Increase (ppm)	Exceeds State Standards	
						1-Hr (20 ppm)	8-Hr (9 ppm)
Waterman Avenue and Mill Street	14 / 14	3.3 / 3.3	0.0	2.6 / 2.6	0.0	No	No
	14 / 14	3.2 / 3.2	0.0	2.5 / 2.5	0.0	No	No
	16 / 16	3.2 / 3.2	0.0	2.5 / 2.5	0.0	No	No
	15 / 15	3.1 / 3.1	0.0	2.5 / 2.5	0.0	No	No
Waterman Avenue and Driveway 1	8 / 8	3.1 / 3.1	0.0	2.5 / 2.5	0.0	No	No
	14 / 14	3.1 / 3.1	0.0	2.5 / 2.5	0.0	No	No
	14 / 14	3.1 / 3.1	0.0	2.5 / 2.5	0.0	No	No
	7 / 7	3.0 / 3.0	0.0	2.4 / 2.4	0.0	No	No
Waterman Avenue and Driveway 2	8 / 8	3.2 / 3.2	0.0	2.5 / 2.5	0.0	No	No
	7 / 7	3.2 / 3.2	0.0	2.5 / 2.5	0.0	No	No
	10 / 10	3.2 / 3.2	0.0	2.5 / 2.5	0.0	No	No
	7 / 7	3.1 / 3.1	0.0	2.5 / 2.5	0.0	No	No
Waterman Avenue and Drake Street-Driveway 3	14 / 14	3.2 / 3.2	0.0	2.5 / 2.5	0.0	No	No
	8 / 8	3.1 / 3.1	0.0	2.5 / 2.5	0.0	No	No
	8 / 8	3.1 / 3.1	0.0	2.5 / 2.5	0.0	No	No
	14 / 14	3.1 / 3.1	0.0	2.5 / 2.5	0.0	No	No
Driveway 4 and Mill Street	7 / 7	2.8 / 2.8	0.0	2.3 / 2.3	0.0	No	No
	7 / 7	2.8 / 2.8	0.0	2.3 / 2.3	0.0	No	No
	14 / 14	2.8 / 2.8	0.0	2.3 / 2.3	0.0	No	No
	7 / 7	2.7 / 2.7	0.0	2.2 / 2.2	0.0	No	No

Source: LSA Associates, Inc., February 2012.
Includes ambient one-hour concentration of 2.3 ppm and ambient eight-hour concentration of 1.9 ppm. Measured at the 24302 4th St., San Bernardino, CA AQ Station in San Bernardino County.
CO = carbon monoxide Hr = hour ppm = parts per million

5.4 AIR QUALITY MANAGEMENT PLAN CONSISTENCY

An AQMP describes air pollution control strategies to be taken by a city, county, or region classified as a nonattainment area. The main purpose of an AQMP is to bring the area into compliance with federal and State air quality standards. CEQA requires that certain proposed projects be analyzed for consistency with the AQMP. For a project to be consistent with the AQMP adopted by the SCAQMD, the pollutants emitted from the project should not exceed the SCAQMD daily threshold or cause a significant impact on air quality, or the project must already have been included in the AQMP projection. However, if feasible mitigation measures are implemented and shown to reduce the impact level from significant to less than significant, a project may be deemed consistent with the AQMP. The AQMP uses the assumptions and projections of local planning agencies to determine control strategies for regional compliance status. Since the AQMP is based on the local General Plan, projects that are deemed consistent with the General Plan are found to be consistent with the AQMP.

The proposed land uses are consistent with the General Plans and Zoning Designations for the project site. Therefore, implementation of the project does not require amendments to the zoning designations for the project site from the City. Therefore, the proposed project is consistent with the General Plans and the regional AQMP.

5.5 CUMULATIVE IMPACTS

The project would contribute criteria pollutants to the area during temporary project construction. A number of individual projects in the area may be under construction simultaneously with the proposed project. Depending on construction schedules and actual implementation of projects in the area, generation of fugitive dust and pollutant emissions during construction could result in substantial short-term increases in air pollutants. This would be a contribution to short-term cumulative air quality impacts.

Currently, the Basin is in nonattainment for PM_{10}, $PM_{2.5}$, and O_3. Construction of the proposed project, in conjunction with other planned developments within the cumulative study area, would contribute to the existing nonattainment status. Therefore, the proposed project would exacerbate nonattainment of air quality standards within the Basin and contribute to adverse cumulative air quality impacts. No feasible quantifiable mitigation measures have been identified to reduce this impact.

The Traffic Impact Study included vehicular trips from all present and future projects in the project vicinity. Therefore, CO hot spot concentrations calculated at these intersections include the cumulative traffic effect. Based on Tables N and O, no significant cumulative CO impacts would occur. Even though the project operations are not expected to result in any significant pollutant emissions, they would contribute cumulatively to increases in long-term area emissions.

5.6 STANDARD CONDITIONS

5.6.1 Construction Impacts

The project is required to comply with regional rules that assist in reducing short-term air pollutant emissions. SCAQMD Rule 403 requires that fugitive dust be controlled with best-available control measures so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. In addition, SCAQMD Rule 403 requires implementation of dust suppression techniques to prevent fugitive dust from creating a nuisance off site. Applicable dust suppression techniques from Rule 403 are summarized below. Implementation of these dust suppression techniques can reduce the fugitive dust generation (and thus the PM_{10} component). Compliance with these rules would reduce impacts on nearby sensitive receptors. See http://www.aqmd.gov/rules/reg/reg04/r403.pdf for rule details. As shown in Table G, implementation of Rule 403 measures results in dust emissions below SCAQMD thresholds.

The applicable Rule 403 measures are as follows:

- Apply nontoxic chemical soil stabilizers according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for 10 days or more).
- Water active sites at least twice daily. (Locations where grading is to occur will be thoroughly watered prior to earthmoving.)
- Cover all trucks hauling dirt, sand, soil, or other loose materials, or maintain at least 0.6 m (2 ft) of freeboard (vertical space between the top of the load and top of the trailer) in accordance with the requirements of California Vehicle Code (CVC) Section 23114.
- Pave construction access roads at least 30 m (100 ft) onto the site from the main road.
- Reduce traffic speeds on all unpaved roads to 15 mph or less.

5.6.2 Project Operations

The project would not create total (vehicular and stationary) daily emissions that exceed the daily emissions thresholds established by the SCAQMD. No mitigation measures would be required. The proposed project is required to comply with Title 24 of the California Code of Regulations (CCR) established by the Energy Commission regarding energy conservation and green buildings standards. The project applicant shall incorporate the following in building plans:

- Low-emission water heaters shall be used. Solar water heaters are encouraged.
- Exterior windows shall utilize window treatments for efficient energy conservation.
- Per Cal Green Code requirements, water-efficient fixtures and appliances, including but not limited to low-flow faucets, dual-flush toilets minimizing water consumption by 20 percent from Building Standards Code baseline water consumption shall be used.
- Per Cal Green Code requirements, a Commissioning Plan shall be prepared and all building systems (e.g. HVAC, irrigation systems, lighting, water heating) shall be commissioned by Commissioning Authority.

- Per Cal Green Code requirements, restricted watering methods (e.g., prohibit systems that apply water to nonvegetated surfaces) and runoff control shall be implemented.

5.7 SUGGESTED ADDITIONAL MINIMIZATION MEASURES

To the extent feasible and to the satisfaction of the City, the following measures should be incorporated into the design and construction of the project (including specific building projects):

Construction and Building Materials.

- Use locally produced and/or manufactured building materials for at least 10 percent of the construction materials used for the project;

Energy Efficiency Measures.

- Provide a landscape and development plan for the project that takes advantage of shade, prevailing winds, and landscaping;
- Install efficient lighting and lighting control systems. Use daylight as an integral part of the lighting systems in buildings.
- Install light-colored "cool" roofs and cool pavements.
- Install energy-efficient heating and cooling systems, appliances and equipment, and control systems.
- Install solar or light-emitting diodes (LEDs) for outdoor lighting.
- Provide vegetative or man-made exterior wall shading devices for east-, south-, and west-facing walls with windows**.**

Water Conservation and Efficiency Measures.

- Devise a comprehensive water conservation strategy appropriate for the project and its location. The strategy may include the following, plus other innovative measures that might be appropriate:
  - Provide drought tolerant plants for landscaping within the development.
  - Use reclaimed water for landscape irrigation within the project. Install the infrastructure to deliver and use reclaimed water.

Solid Waste Measures.

- Provide employee education about reducing waste and available recycling services.

5.8 MITIGATION MEASURES

The Proposed Project and its contractors shall ensure that, during construction, site preparation and grading phases do not overlap and that all other construction phases occur after these two phases so that construction emissions do not exceed those established by the SCAQMD.

6.0 REFERENCES

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South Coast Air Quality Management District. *Rule 701*. June 13, 1997.

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APPENDIX A

CALEEMOD MODEL PRINTOUTS

APPENDIX B

CO HOT SPOT ANALYSIS MODEL PRINTOUTS