# AIR QUALITY ANALYSIS

## NEWPORT BEACH CITY HALL AND PARK DEVELOPMENT PLAN

Submitted to:

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LSA

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# INTRODUCTION

This air quality impact analysis evaluates potential air quality impacts that would result from the development and operation of the Newport Beach City Hall and Park Development Plan (proposed project) on an approximately 20-acre site in the City of Newport Beach (City). This 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 analysis provides data on existing air quality, evaluates potential air quality impacts associated with the proposed project, and identifies mitigation measures recommended for potentially significant impacts. Modeled air quality levels are based upon vehicle data and project trip generation included in a traffic study prepared for the proposed project (RBF, July 2009).

The evaluation was prepared in conformance with appropriate standards, utilizing procedures and methodologies in the South Coast Air Quality Management District (SCAQMD) *CEQA* [California Environmental Quality Act] *Air Quality Handbook* (SCAQMD, April 1993).

# PROJECT DESCRIPTION

## Project Location

The proposed project site is located in the City between Avocado Avenue and MacArthur Boulevard, as shown in Figure 1.

## Project Description

The proposed project site is located in the City between Avocado Avenue and MacArthur Boulevard and consists of four parcels. The two Library parcels are collectively referred to as the "southern parcel" while the other two parcels are referred to as the northern and central parcels. Altogether, the proposed project site is approximately 20 acres. The northern parcel and the central parcel, both of which are currently vacant, are separated by San Miguel Drive. The southern parcel is occupied by the existing Newport Beach Public Library (Library) located at 1000 Avocado Avenue; the Library will be expanded as part of the proposed project.

The proposed project would result in the relocation of City functions (except for Fire Station No. 2)[1] currently taking place at the existing City Hall located at 3300 Newport Boulevard to the proposed project site. The proposed project includes eight primary components, including: (1) construction and operation of an approximately 98,000-square-foot (sf) City Hall administration building, Community Room, and Council Chambers; (2) a 450-space parking structure; (3) an approximately 17,000 sf expansion of the Newport Beach Central Library (Library); (4) a dedicated 4,800 sf Emergency Operations Center (EOC); (5) a Civic Green; (6) construction of a 14.3-acre public park that includes a dog park, wetlands area, bridges over the wetlands, lookout points, and a pedestrian overcrossing over San Miguel Drive; (7) widening of San Miguel Drive; and (8) reuse of the existing City Hall structures located at 3300 Newport Boulevard with public facilities uses. Throughout this technical report, project components 1–5 are collectively referred to as the Civic Center. The conceptual site plan is shown in Figure 2.

The proposed City Hall and parking structure would be located immediately north of the existing library. The proposed project would stretch from the northern boundary of the library structure to the northern end of the northern parcel, adjacent to the existing Orange County Transportation Authority (OCTA) facility. The park is proposed to include both natural and more formal park features. A pedestrian bridge over San Miguel Drive is also proposed to link the central and northern parcels. A dog park is proposed to be located in the section of the park north of San Miguel Drive.

[1] Fire Station No. 2 serves a specific area of the Peninsula and Lido Isle and coincidentally is on the existing City Hall site.

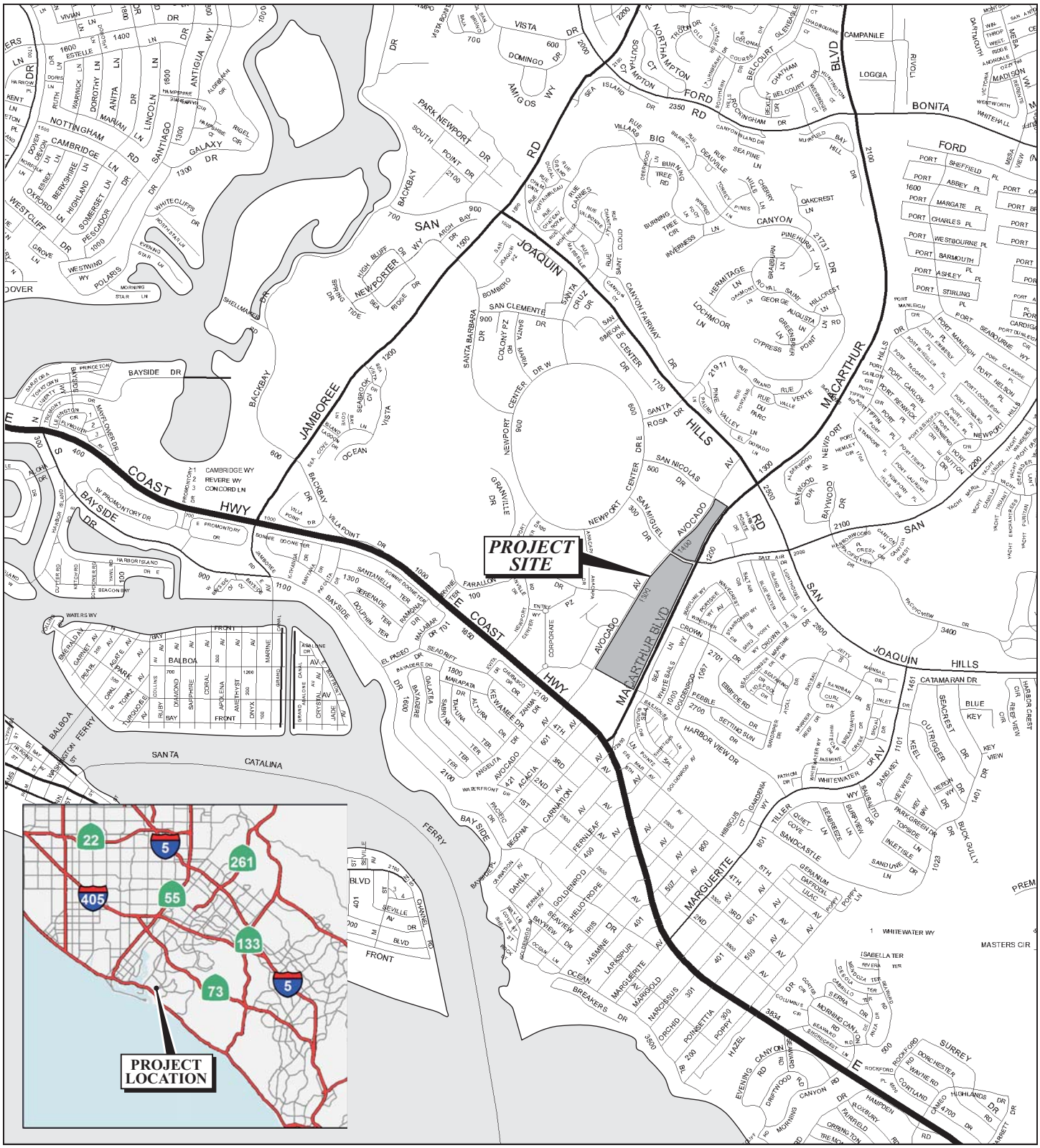


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FIGURE 1

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0 1000 2000

FEET

SOURCE: The Thomas Guide

*Newport Beach City Hall and Park Development Plan*

Project Location

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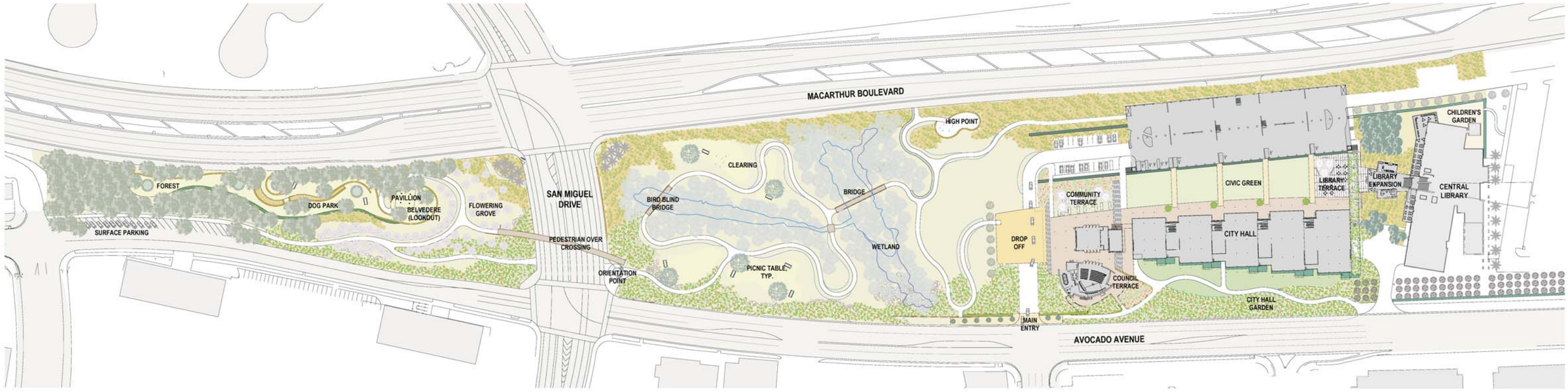


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FIGURE 2

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0 100 200
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SOURCE: Bohlin Cywinski Jackson/PWP/ARUP

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*Newport Beach City Hall and Park Development Plan*

Site Plan

## IMPLEMENTATION/PROJECT PHASING

The proposed project is planned for development in a single phase, including site preparation, grading, installation and connection of utilities, street improvements, public park landscaping and trail development, and construction of the parking structure, library expansion, and all City Hall structures. Traffic circulation, storm water drainage, water, electrical, gas, and sewer system improvements would be integrated with the existing City and utility-owned infrastructure as necessary.

# SETTING

## METHODOLOGY RELATED TO AIR QUALITY IMPACT ASSESSMENT

Evaluation of air quality impacts associated with the proposed project includes the following:

- Determining the short-term construction air quality impacts;
- Determining the long-term air quality impacts resulting from emissions from vehicular traffic and stationary sources on off-site and on-site air quality-sensitive uses;
- Determining mitigation measures required to reduce short-term and long-term, air quality impacts from all sources

## EXISTING ENVIRONMENTAL SETTING

The project site is located within the City of Newport Beach, 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 both short-term construction and long-term operation of the proposed project.

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

### Regional Air Quality

Both the State of California and the federal government have established health-based Ambient Air Quality Standards (AAQS). As shown in Table A, these pollutants include ozone ($O_3$), carbon monoxide (CO), nitrogen dioxide ($NO_2$), sulfur dioxide ($SO_2$), particulate matter (PM), and lead. PM includes particulate matter with a diameter of 10 microns or less ($PM_{10}$) and particulate matter with a diameter of 2.5 microns or less ($PM_{2.5}$). 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 episodic 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. Table B lists the health effects of these criteria pollutants and their potential sources.

## Table A: Ambient Air Quality Standards (AAQS)

| 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 | 0.07 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 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) | 6.0 ppm (7 mg/m$^3$) | | — | — | — |
| **Nitrogen Dioxide ($NO_2$)** | Annual Arithmetic Mean | 0.030 ppm (56 µg/m$^3$) | Gas Phase Chemiluminescence | 0.053 ppm (100 µg/m$^3$) | Same as Primary Standard | Gas Phase Chemiluminescence |
| | 1-Hour | 0.18 ppm (338 µg/m$^3$) | | — | | |
| **Sulfur Dioxide ($SO_2$)** | Annual Arithmetic Mean | — | Ultraviolet Fluorescence | 0.030 ppm (80 µg/m$^3$) | — | Spectrophotometry (Pararosaniline Method) |
| | 24-Hour | 0.04 ppm (105 µg/m$^3$) | | 0.14 ppm (365 µg/m$^3$) | — | |
| | 3-Hour | — | | — | 0.5 ppm (1300 µg/m$^3$) | |
| | 1-Hour | 0.25 ppm (655 µg/m$^3$) | | — | — | |
| **Lead[8]** | 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[9] | — | | 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[8]** | 24-Hour | 0.01 ppm (26 µg/m$^3$) | Gas Chromatography | | | |

Source: California Air Resources Board (ARB) (November 17, 2008).

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 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; parts per million in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[4] Any equivalent procedure that can be shown to the satisfaction of the 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] 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.

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

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

| Pollutants | Sources | Primary Effects |
|---|---|---|
| Ozone ($O_3$) | Atmospheric reaction of organic gases with nitrogen oxides in the presence of sunlight. | Aggravation of respiratory and cardiovascular diseases.<br>Irritation of eyes.<br>Impairment of cardiopulmonary function.<br>Plant leaf injury. |
| Nitrogen Dioxide ($NO_2$) | Motor vehicle exhaust.<br>High temperature stationary combustion.<br>Atmospheric reactions. | Aggravation of respiratory illness.<br>Reduced visibility.<br>Reduced plant growth.<br>Formation of acid rain. |
| Carbon Monoxide (CO) | By-products from incomplete combustion of fuels and other carbon containing substances, such as motor exhaust.<br>Natural events, such as decomposition of organic matter. | Reduced tolerance for exercise.<br>Impairment of mental function.<br>Impairment of fetal development.<br>Death at high levels of exposure.<br>Aggravation of some heart diseases (angina). |
| Suspended Particulate Matter ($PM_{2.5}$ and $PM_{10}$) | Stationary combustion of solid fuels.<br>Construction activities.<br>Industrial processes.<br>Atmospheric chemical reactions. | Reduced lung function.<br>Aggravation of the effects of gaseous pollutants.<br>Aggravation of respiratory and cardiorespiratory diseases.<br>Increased cough and chest discomfort.<br>Soiling.<br>Reduced visibility. |
| Sulfur Dioxide ($SO_2$) | Combustion of sulfur-containing fossil fuels.<br>Smelting of sulfur-bearing metal ores.<br>Industrial processes. | Aggravation of respiratory diseases (asthma, emphysema).<br>Reduced lung function.<br>Irritation of eyes.<br>Reduced visibility.<br>Plant injury.<br>Deterioration of metals, textiles, leather, finishes, coatings, etc. |
| Lead (Pb) | Contaminated soil (e.g., from leaded fuels and lead-based paints). | Impairment of blood function and nerve construction.<br>Behavioral and hearing problems in children. |

Source: ARB 2001.

Because the concentration standards were set by the United States Environmental Policy Act (EPA) at a level that protects public health with an adequate margin of safety, 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, $O_3$, $PM_{2.5}$, and $PM_{10}$ are considered regional pollutants, while the others have more localized effects.

The California Clean Air Act (CCAA) provides the SCAQMD 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 are 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 California Air Resources Board (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 like wind speed, wind direction, temperature, and rainfall. 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.

Climate in the Basin is determined by its terrain and geographical location. The Basin is a coastal plain with connecting broad valleys and low hills. The Pacific Ocean forms the southwestern border, and high mountains surround the rest of the Basin. The Basin lies in the semi-permanent, high-pressure zone of the eastern Pacific; the resulting climate is mild and tempered by cool ocean breezes. This climatological pattern is rarely interrupted. However, periods of extremely hot weather, winter storms and Santa Ana wind conditions do occur.

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 Newport Beach Harbor Station.[1] The monthly average maximum temperature recorded at this station from January 1921 to December 2008 ranged from 63.1°F in January to 73.5°F in August, with an annual average maximum of 67.8°F. The monthly average minimum temperature recorded at this station ranged from 46.8°F in January to 63.2°F in August, with an annual average minimum of 54.5°F. January is typically the coldest month, and August is typically the warmest month in this area of the Basin.

Most 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 Newport Beach Harbor Station monitored precipitation from January 1921 to December 2008. Average monthly rainfall during that period varied from 2.33 inches in February to 0.38 inch or less between May and October, with an annual total of 11.13 inches. Patterns in monthly and yearly rainfall totals are unpredictable due to fluctuations in the weather.

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

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- to late afternoon on hot summer days, when the smog appears to clear up suddenly. Winter inversions frequently break by mid-morning.

Winds in the Basin are predominantly low velocity. Wind speeds in the Basin 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 onshore into Riverside and San Bernardino Counties. In the winter, the greatest pollution problems are carbon monoxide and oxides of nitrogen, 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 oxides of nitrogen to form photochemical smog.

**Air Pollution Constituents and Attainment Status.** The following describes the six criteria air pollutants and their attainment status in the Basin based on ARB's Area Designations (Activities and Maps).[1] Both the State of California and the federal government have established health-based ambient air quality standards (AAQS) for these criteria air pollutants. Areas that meet AAQSs are classified as attainment areas, while areas that do not meet these standards are classified as nonattainment areas. Table C summarizes the attainment status in the Basin for the major criteria pollutants.

[1] http://www.arb.ca.gov/desig/desig.htm

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

| Pollutant | State | Federal |
|---|---|---|
| $O_3$ 1-hour | Nonattainment | Revoked June 2005 |
| $O_3$ 8-hour | Nonattainment | Severe 17 Nonattainment |
| $PM_{10}$ | Nonattainment | Serious Nonattainment[1] |
| $PM_{2.5}$ | Nonattainment | Nonattainment[2] |
| CO | Attainment | Attainment/Maintenance[3] |
| $NO_2$ | Attainment | Attainment/Maintenance |
| All others | Attainment/Unclassified | Attainment/Unclassified |

Source: California Air Resources Board (ARB), 2009 (http://www.arb.ca.gov/desig/desig.htm).

[1] In October 2006, the EPA, in its final rule revision, eliminated the annual $PM_{10}$ standard.

[2] The $PM_{2.5}$ nonattainment designation is based on the 1997 standard. In 2006, the EPA revised the 24-hour standard. The 2006 $PM_{2.5}$ new standard of 35 $\mu g/m^3$ applies 1 year after the effective date of the new designation (April 2010).

[3] Effective June 11, 2007, the South Coast Air Basin was redesignated as attainment/maintenance for the federal CO standard.

CO = carbon monoxide
$NO_2$ = nitrogen dioxide
$O_3$ = ozone
$PM_{10}$ = particulate matter less than 10 microns in diameter
$PM_{2.5}$ = particulate matte less than 2.5 microns in diameter

**Ozone.** $O_3$ (smog) is formed by photochemical reactions between nitrogen oxides ($NO_X$) 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. Effective June 15, 2005, the EPA revoked in full the federal 1-hour ozone ambient air quality standard, including associated designations and classifications, in all areas except 14 early action compacts[1] all outside California. The entire Basin is designated as a nonattainment area[2] for the State 1-hour ozone standard. The EPA has designated the status in the Basin for the 8-hour ozone standard as "Severe 17," which means the Basin has until 2021 to attain the federal 8-hour ozone standard. SCAQMD has requested that the Basin's federal designation be changed from severe to extreme nonattainment. This change would extend the attainment deadline to 2023.

**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 designated as attainment/maintenance[3] for the federal standard and attainment for the State CO standard.

[1] Early Action Compacts are agreements entered into between the EPA and communities that are working to get clean air as soon as possible by reducing ground-level ozone pollution.

[2] The EPA defines a nonattainment area as a locality where air pollution levels persistently exceed or fail to meet standards.

[3] An area in attainment of federal standards and required to test for maintenance of those 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 has not exceeded both federal and State standards for $NO_2$ in the past five years with published monitoring data. It is designated a maintenance area under federal standards and an attainment area under State standards.

**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 bloodstream, lead can cause damage to the brain, nervous system, and other body systems. Children are highly susceptible to the effects of lead. The entire Basin is in attainment for federal and State lead standards.

**Particulate Matter.** Particulate matter is the term used for a mixture of solid particles and liquid droplets found in the air. Coarse particles, $PM_{10}$, 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, $PM_{2.5}$, 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 penetrates deeply into the lungs, is more likely than $PM_{10}$ 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 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 (in 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. The entire Basin is a nonattainment area for federal and State $PM_{10}$ and federal $PM_{2.5}$ standards. The $PM_{2.5}$ nonattainment designation is effective from April 5, 2005, and the conformity determination requirements are effective from April 5, 2006. In the 2007 Air Quality Management Plan (AQMP), SCAQMD anticipated that the Basin will be in attainment for the $PM_{2.5}$ annual average federal air quality standard by the April 5, 2015, deadline.

**Reactive Organic Compounds.** Reactive organic compounds (ROCs) are formed from the combustion of fuels and evaporation of organic solvents. ROCs are not defined criteria pollutants but

are a prime component of the photochemical smog reaction. Consequently, ROCs accumulate in the atmosphere more quickly during the winter, when sunlight is limited and photochemical reactions are slower. ROCs are also referred to as volatile organic compounds (VOCs).

### Local Air Quality

The 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 Costa Mesa station, and its air quality trends are representative of the ambient air quality in the project area. As the Costa Mesa Station does not monitor $PM_{10}$ and $PM_{2.5}$ concentrations, the data from the Anaheim Station was used for this analysis. The pollutants monitored are CO, $O_3$, $PM_{10}$, $PM_{2.5}$, $NO_2$, and $SO_2$.[1]

The ambient air quality data in Table D show that $NO_2$, $SO_2$, and CO levels are below the applicable State and federal standards. The State 1-hour $O_3$ standard was not exceeded in the past 3 years. The federal 8-hour $O_3$ standard was exceeded three times in 2008 in the past 3 years. The State 24-hour $PM_{10}$ standard was exceeded from 3 to 7 days in each of the past 3 years and exceeded the federal 24-hour standard once in 2007. The federal 24-hour $PM_{2.5}$ standard was exceeded from 2 to 14 days per year for the past 3 years. The State annual average $PM_{2.5}$ standard has been exceeded every year for the past 3 years.

## REGULATORY SETTINGS

### Federal Regulations/Standards

Pursuant to the federal Clean Air Act (CAA) of 1970, the EPA established national ambient air quality standards (NAAQS) 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 have additional restrictions imposed by the EPA.

The EPA has designated the Southern California Association of Governments (SCAG) as the Metropolitan Planning Organization (MPO) responsible for ensuring the Basin's compliance with the CAA.

[1] Air quality data, 2006–2008; EPA and ARB Web sites.

## Table D: Ambient Air Quality at the Costa Mesa and Anaheim Air Monitoring Stations

| Pollutant | Standard | 2008 | 2007 | 2006 |
|---|---|---|---|---|
| **Carbon Monoxide (CO)** | | | | |
| Maximum 1-hr concentration (ppm) | | 3.0 | 4.5 | 3.5 |
| Number of days exceeded: | State: > 20 ppm | 0 | 0 | 0 |
| | Federal: > 35 ppm | 0 | 0 | 0 |
| Maximum 8-hr concentration (ppm) | | 2.0 | 3.1 | 3.0 |
| Number of days exceeded: | State: ≥ 9.0 ppm | 0 | 0 | 0 |
| | Federal: ≥ 9 ppm | 0 | 0 | 0 |
| **Ozone ($O_3$)** | | | | |
| Maximum 1-hr concentration (ppm) | | 0.094 | 0.082 | 0.074 |
| Number of days exceeded: | State: > 0.09 ppm | 0 | 0 | 0 |
| Maximum 8-hr concentration (ppm) | | 0.079 | 0.072 | 0.062 |
| Number of days exceeded: | Federal: > 0.075 ppm | 3 | 0 | 0 |
| **Coarse Particulates ($PM_{10}$)** | | | | |
| Maximum 24-hr concentration (μg/m$^3$) | | 61 | 489 | 104 |
| Number of days exceeded: | State: > 50 μg/m$^3$ | 3 | 6 | 7 |
| | Federal: > 150 μg/m$^3$ | 0 | 1 | 0 |
| Annual arithmetic average concentration (μg/m$^3$) | | 28.6 | 38.6 | 33.3 |
| Exceeded for the year: | State: > 20 μg/m$^3$ | Y | Y | Y |
| | Federal: > 50 μg/m$^3$ | N | N | N |
| **Fine Particulates ($PM_{2.5}$)** | | | | |
| Maximum 24-hr concentration (μg/m$^3$) | | 39.4 | 79.4 | 56.2 |
| | Federal: > 35 μg/m$^3$ | 2 | 14 | 7 |
| Annual arithmetic average concentration (μg/m$^3$) | | 12.1 | 14.4 | 14.0 |
| Exceeded for the year: | State: > 12 μg/m$^3$ | Y | Y | Y |
| | Federal: > 15 μg/m$^3$ | N | N | N |
| **Nitrogen Dioxide ($NO_2$)** | | | | |
| Maximum 1-hr concentration (ppm) | | 0.081 | 0.074 | 0.101 |
| Number of days exceeded: | State: > 0.25 ppm | 0 | 0 | 0 |
| Annual arithmetic average concentration (ppm) | | 0.013 | 0.013 | 0.015 |
| Number of days exceeded: | Federal: > 0.053 ppm | N | N | N |
| **Sulfur Dioxide ($SO_2$)** | | | | |
| Maximum 1-hr concentration (ppm) | | 0.009 | 0.029 | 0.012 |
| Number of days exceeded: | State: > 0.25 ppm | 0 | 0 | 0 |
| Maximum 3-hr concentration (ppm) | | 0.006 | 0.017 | 0.009 |
| Number of days exceeded: | Federal: > 0.5 ppm | 0 | 0 | 0 |
| Maximum 24-hr concentration (ppm) | | 0.003 | 0.004 | 0.005 |
| 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 | 0.001 | 0.001 |
| Exceeded for the year: | Federal: > 0.030 ppm | N | N | N |

Source: EPA and ARB, 2009.
ARB = California Air Resources Board
EPA = United States Environmental Protection Agency
hr = hour
ppm = parts per million
μg/m$^3$ = microgram of pollutant per cubic meter of air

The EPA established new national air quality standards for ground-level $O_3$ and $PM_{2.5}$ 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 PM $_{2.5}$, was unconstitutional as an improper delegation of legislative authority to the EPA. On February 27, 2001, the United States 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 lawmaking power from Congress when it set tougher standards for $O_3$ and particulate matter 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.

The EPA issued the final $PM_{2.5}$ implementation rule in Fall 2004. The EPA issued final designations on December 14, 2004. The EPA lowered the 24-hour $PM_{2.5}$ standard from 65 to 35 micrograms per cubic meter ($\mu g/m^3$) and revoked the annual average $PM_{10}$ standard in December 2006.

### State Regulations/Standards

The State of California began to set California ambient air quality standards (CAAQS) in 1969 under the mandate of the Mulford-Carrell Act. The CAAQS are generally more stringent than the NAAQS. In addition to the six criteria pollutants covered by the NAAQS, there are CAAQS for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards, along with the NAAQS, are previously shown in Table A. In January 2007 the CAAQS for 1-hour $NO_2$ was reduced from 0.25 ppm to 0.18 ppm.

Originally, there were no attainment deadlines for CAAQS. However, the CCAA of 1988 provided a time frame and a planning structure to promote their attainment. The CCAA required nonattainment areas in the State to prepare attainment plans and proposed to classify each such area on the basis of the submitted plan, as follows: moderate (if CAAQS attainment could not occur before December 31, 1994); serious (if CAAQS attainment could not occur before December 31, 1997); and severe (if CAAQS attainment could not be conclusively demonstrated).

The attainment plans are required to achieve a minimum 5 percent annual reduction in the emissions of nonattainment pollutants unless all feasible measures have been implemented. The Basin is currently classified a nonattainment area for four criteria pollutants. ($O_3$ 1-hour, $O_3$ 8-hour, $PM_{10}$, and $PM_{2.5}$)

### 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 coordinates and oversees both state and federal air pollution control programs in California. It oversees activities of local air quality management agencies and is responsible for incorporating air quality management plans for local air basins into a State Implementation Plan (SIP) for EPA approval. The ARB maintains air quality monitoring stations throughout the State in conjunction with local air districts. Data collected at these stations are used by the ARB to classify air basins as "attainment" or "nonattainment" with respect to each pollutant and to monitor progress in attaining air quality standards. The ARB has divided the State into 15 air basins. 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; 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.

This revision to the AQMP also addressed 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 ozone SIP for the Basin for the attainment of the federal ozone air quality standard. However, this revision points to the urgent need for additional emission reductions (beyond those incorporated in the 1997/1999 Plan) to offset increased emission estimates from mobile sources and meet all federal criteria pollutant standards within the time frames stipulated under the federal CAA.

The SCAQMD adopted the 2007 AQMP on June 1, 2007, which it describes as a regional and multiagency effort (i.e., the SCAQMD Governing Board, ARB, SCAG, and EPA). 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 emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. The ARB approved the 2007 AQMP on September 27, 2007, and adopted it as part of the 2007 SIP. SCAQMD has forwarded the 2007 AQMP to the EPA for its review and approval.

## City Air Quality Goal and Policies

**Municipal Code.** The City's Municipal Code does address air quality by establishing a special fund to receive revenue distributed by the SCAQMD. The SCAQMD imposes an additional vehicle registration fee, of which the City is eligible to receive a portion, to implement mobile source air pollution reduction programs.

**General Plan.** The Natural Resources Element of the City's General Plan (2006) includes goals and polices related to Air Quality. The following goals and policies are applicable to the proposed project.

> **NR 6:** Reduced mobile source emissions.
>
> **NR 6.3 Vehicle-Trip Reduction Measures.** Support measures to reduce vehicle-trip generation such as at-work day care facilities, and on-site automated banking machines. (Imp 1.2, 2.1)
>
> **NR 6.4 Transportation Demand Management Ordinance.** Implement the Transportation Demand Management (TDM) Ordinance, which promotes and encourages the use of alternative transportation modes, and provides those facilities such as bicycle lanes that support such alternate modes. (Imp 7.3, 16.8, 16.11)
>
> **NR 6.5 Local Transit Agency Collaboration.** Collaborate with local transit agencies to: develop programs and educate employers about employee rideshare and transit; establish mass transit mechanisms for the reduction of work-related and non-work-related vehicle trips; promote mass transit ridership through careful planning of routes, headways, origins and destinations, and types of vehicles; and develop bus shelters, bicycle lanes, and other bicycle facilities. (Imp 14.4, 14.9, 16.8, 29.1)
>
> **NR 6.6 Traffic Signal Synchronization.** Encourage synchronization of traffic signals throughout the City and with adjoining cities and counties to allow free flow of traffic. (Imp 14.1, 16.7)
>
> **NR 6.9 Education on Mobile Source Emission Reduction Techniques.** Provide education to the public on mobile source emission reduction techniques such as using alternative modes of transportation. (Imp 29.1)
>
> **NR 7:** Reduced air pollutant emissions from stationary sources.
>
> **NR 7.1 Fuel Efficient Equipment.** Support the use of fuel efficient heating equipment and other appliances. *(Imp 14.15)*
>
> **NR 7.2 Source Emission Reduction Best Management Practices.** Require the use of Best Management Practices (BMP) to minimize pollution and to reduce source emissions. *(Imp 7.1)*
>
> **NR 7.3 Incentives for Air Pollution Reduction.** Provide incentives to promote siting or to use clean air technologies and building materials (e.g., fuel cell

technologies, renewable energy sources, UV coatings, hydrogen fuel). *(Imp 2.1, 6.1, 7.1)*

**NR 8:** Reduced air pollutant emissions from construction activities.

**NR 8.1 Management of Construction Activities to Reduce Air Pollution.** Require developers to use and operate construction equipment, use building materials and paints, and control dust created by construction activities to minimize air pollutants. (Imp 7.1)

## THRESHOLDS OF SIGNIFICANCE

Based on Guidelines for the Implementation of California Environmental Quality Act, 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 AAQS, 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 and quarterly 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 emission 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 emission thresholds are regarded as conservative and may overstate an individual project's contribution to health risks.

### Thresholds for Construction Emissions

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

- 75 pounds per day (lbs/day) of ROCs
- 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 sulfur oxides ($SO_X$)

Projects in the Basin with construction-related emissions that exceed any of the emission thresholds will be considered significant under CEQA.

### Thresholds for Operational Emissions

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

**Emission Thresholds for Pollutants with Regional Effects.** Projects with operations-related emissions that exceed any of the emission thresholds listed below are considered significant under the SCAQMD guidelines.

- 55 lbs/day of ROCs
- 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 $SO_X$

**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 part per million (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

### 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 are 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 North Coastal Orange County area (Area 18). The project site is larger than 5 acres; therefore, air dispersion modeling was performed to determine potential impacts from construction activities. The nearest sensitive receptors are residential uses to the east of the project site boundary approximately 166 feet (ft) (50 meters [m]) from the property line. Libraries are not considered a sensitive land use for air quality analysis in terms of standards because users are typically inside and are not expected to be outside for extended periods of time.

Therefore, the following 50 m thresholds are used for the proposed project on its operational emissions.

Operational thresholds for a 5-acre site at 50 m:

- 190 lbs/day of $NO_X$
- 1,864 lbs/day of CO
- 11 lbs/day of $PM_{10}$
- 3 lb/day of $PM_{2.5}$

# 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 and stationary source emissions due to energy consumption, such as natural gas and electricity usage by the proposed project.

## CONSTRUCTION IMPACTS

Construction activities produce combustion emissions from various sources such as utility engines, on-site heavy-duty construction vehicles, equipment hauling materials to and from the site, asphalt paving, and motor vehicles transporting the construction crew. Exhaust emissions from construction activities utilized on site would vary daily as construction activity levels change and would result in localized exhaust emissions.

Construction activities associated with new development occurring on site would temporarily increase localized $PM_{10}$, $PM_{2.5}$, ROC, $NO_X$, and CO concentrations in the project vicinity. The primary sources of construction-related ROC and $NO_X$ emissions are gasoline- and diesel-powered heavy-duty mobile construction equipment such as scrapers and motor graders. Primary sources of $PM_{10}$ and $PM_{2.5}$ emissions would be clearing activities, excavation and grading operations, construction vehicle traffic on unpaved ground, and wind blowing over exposed earth surfaces.

Emissions generated from construction activities are anticipated to cause temporary increases in pollutant concentrations that could contribute to continuing violations of the federal and State maximum concentration standards. The frequency and concentrations of such violations would depend on several factors, including the soil composition on site, the amount of soil disturbed, wind speed, the number and type of machinery used, the construction schedule, and the proximity of other construction and demolition projects.

Based on the construction operation estimates provided by C.W. Driver (July 2009), the project's construction manager, grading the project site will require the removal of approximately 320,000 cubic yards (cy) of material. A reasonable worst-case condition is for all the material removal to be hauled approximately 32 miles to the Prima Deshecha Landfill for disposal. Because a specific disposal site has not been identified at this time, the assumptions for hauling to Prima Deshecha Landfill were used for preparation of the emission estimates. Table E lists the construction emissions estimates. The construction emissions were calculated using an equipment list and schedule from C.W. Driver and the URBEMIS2007 emission model. The construction emission calculations are included in Appendix A. Based on the construction schedule, building construction would not begin until after the mass grading has been completed. Table E shows that construction equipment/vehicle emissions would exceed the SCAQMD $NO_X$ and ROC thresholds during the grading phase and would exceed the ROC threshold during architectural coating. Construction equipment/vehicle emissions would not exceed SCAQMD thresholds for CO or $SO_X$.

**Table E: Peak-Day Construction Emissions (lbs/day) by Phase**[1]

| Construction Phase | CO | ROC | $NO_X$ | $SO_X$ | $PM_{10}$[2] | $PM_{2.5}$ |
|---|---|---|---|---|---|---|
| Mass Grading | 382.4 | 75.2 | 939.2 | 0.9 | 94.7 | 49.6 |
| Fine Grading | 20.5 | 4.7 | 37.8 | 0.0 | 52.2 | 10.5 |
| Trenching | 9.7 | 2.4 | 20.2 | 0.0 | 1.0 | 0.9 |
| Paving | 13.5 | 4.7 | 23.1 | 0.0 | 1.7 | 1.6 |
| Building | 54.7 | 5.6 | 22.2 | 0.1 | 1.7 | 1.5 |
| Architectural Coating | 1.6 | 123.4 | 0.1 | 0.0 | 0.0 | 0.0 |
| **SCAQMD Emission Threshold** | **550** | **75** | **100** | **150** | **150** | **55** |
| **Exceed Significance?** | **NO** | **YES** | **YES** | **NO** | **NO** | **NO** |

Source: LSA Associates, Inc., July 2009.
[1] It is assumed that there is no overlap of these construction phases.
[2] Total $PM_{10}$ daily emission rate with fugitive dust mitigation measures implemented.

CO = carbon monoxide
$CO_2$ = carbon dioxide
lbs/day = pounds per day
NA = not applicable
$NO_X$ = nitrogen oxide
$PM_{10}$ = particulate matter less than 10 microns in size
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
ROC = reactive organic compounds
SCAQMD = South Coast Air Quality Management District
$SO_X$ = sulfur oxide

## Fugitive Dust

Fugitive dust emissions are generally associated with land clearing, exposure, and cut-and-fill operations. Dust generated daily during construction would vary substantially, depending on the level of activity, the specific operations, and weather conditions. Nearby sensitive receptors and on-site workers may be exposed to blowing dust, depending upon prevailing wind conditions. Fugitive dust also would be generated as construction equipment or trucks travel on unpaved areas of the construction site.

$PM_{2.5}$ and $PM_{10}$ emissions from grading operations during a peak construction day were calculated using the URBEMIS2007 model and are included in the emissions listed in Table E. As shown in Table E, $PM_{2.5}$ and $PM_{10}$ emissions from grading operations during a peak construction day are not anticipated to exceed SCAQMD thresholds.

## Localized Significance Analysis

Table F lists the construction-related LSTs for the North Coastal Orange County area as calculated using AERMOD air dispersion modeling and the ambient pollutant concentrations as shown in Table D, following the SCAQMD LST methodology. These concentrations were calculated at the existing residences located to the east of the project site across MacArthur Boulevard. The emissions included in the dispersion analysis include all on-site construction equipment emissions and a percentage of the haul truck trip emissions. The haul truck trip percentage is based on the distance that trucks will travel on site. For the purposes of the LST analysis it is assumed that the haul trucks will travel 1 mile on site. The LST dispersion analysis calculations are included in Appendix B. As shown in Table F, resulting concentrations of $PM_{10}$ would exceed the LST threshold.

## Table F: Construction LST Modeling Results

| Category | Maximum Increase in Ambient Concentrations for Off-Site Sensitive Receptors During Project Construction |
|---|---|
| **$PM_{10}$ (24-hour Average)** | |
| Maximum Concentration Increase ($\mu g/m^3$) | 42.8 |
| Threshold ($\mu g/m^3$) | 10.4 |
| Over/(Under) | 32.4 |
| Adverse Concentration | Yes |
| **$PM_{2.5}$ (24-hour Average)** | |
| Maximum Concentration Increase ($\mu g/m^3$) | 8.81 |
| Threshold ($\mu g/m^3$) | 10.4 |
| Over/(Under) | (1.6) |
| Adverse Concentration | No |
| **$NO_2$ (1-hour Average)** | |
| Maximum Concentration Increase ($\mu g/m^3$) | 71 |
| Threshold ($\mu g/m^3$) (AAQS – ambient) | 149 |
| Over/(Under) | (78) |
| Adverse Concentration | No |
| **CO (1-Hour Average)** | |
| Maximum Concentration Increase ($\mu g/m^3$) | 570 |
| Threshold ($\mu g/m^3$) (AAQS – ambient) | 17,857 |
| Over/(Under) | (17,287) |
| Adverse Concentration | No |
| **CO (8-Hour Average)** | |
| Maximum Concentration Increase ($\mu g/m^3$) | 94 |
| Threshold ($\mu g/m^3$) (AAQS – ambient) | 6,457 |
| Over/(Under) | (6,363) |
| Adverse Concentration | No |

Source : LSA Associates, Inc. July 2009.
AAQS = ambient air quality standards
CO = carbon monoxide
$\mu g/m^3$ = microgram of pollutant per cubic meter of air
$NO_2$ = nitrogen dioxide
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
$PM_{10}$ = particulate matter less than 10 microns in size

## Odors

Some objectionable odors may emanate from the operation of diesel-powered construction equipment during the construction of the proposed project. These odors, however, would be limited to the short-term construction period of the project, are not expected to be substantial, and therefore, would not be significant.

### Summary of Construction Emissions

Based on the above information, with implementation of feasible mitigation measures during construction of the proposed project, emissions from construction equipment exhaust and soil disturbance would be minimized; however, construction emissions from the project will exceed the SCAQMD daily emissions thresholds for $NO_X$ and ROC, and resulting concentrations of $PM_{10}$ would exceed the LST threshold. Construction equipment/vehicle emissions would not exceed SCAQMD thresholds for CO or $SO_X$. Mitigation measures will be required to reduce $NO_X$, ROC, and $PM_{10}$ emissions; however, even with implementation of all available mitigation measures, project impacts related to construction emissions would remain significant and unavoidable.

The emissions generated during the peak grading period (Tables E and F) are anticipated to be much higher than the emissions generated during the construction of the on-site structures. Therefore, any emissions generated during periods of overlap between project operations and final construction would be lower than those shown in Tables E and F.

## LONG-TERM REGIONAL AIR QUALITY IMPACTS

Long-term air emission impacts are those associated with stationary sources and mobile sources related to any change related to the proposed project. Long-term regional air quality impacts are based on the daily operational emissions significance thresholds established by the SCAQMD. Operations-related emissions are not to exceed 55 lbs/day of ROCs, 55 lbs/day of $NO_X$, 550 lbs/day of CO, 150 lbs/day of $PM_{10}$, 55 lbs/day of $PM_{2.5}$, and 150 lbs/day of $SO_X$. The proposed development would consist of a City Hall, parking structure, expanded library, and park facilities. The stationary source emissions from these land uses would come from consumption of natural gas and electricity[1]. Using the URBEMIS2007 model, emissions associated with project-related stationary sources were calculated and are included in Table G as area source emissions.

Based on the traffic study prepared for this project (RBF Consulting, July 2009), the proposed project would generate 3,070 daily trips. Using the default emission factors included in URBEMIS2007 (Version 9.2.4), emissions associated with project-related vehicular trips were calculated and are included in Table G.

As shown in Table G, the project's emissions (both stationary sources and vehicular sources) would not exceed the SCAQMD daily emissions thresholds. Therefore, the long-term air quality impacts of the proposed project are less than significant, and no mitigation measures are required. The URBEMIS2007 model runs are included in Appendix A.

[1] An emergency generator is included in the proposed project. However, emergency generator testing, although done periodically, is usually short term (e.g., an hour a month) and is typically not included in the analysis. However, landscaping activities are captured in the URBEMIS model run results under long-term operational emissions.

### Table G: Operational Emissions

| Source | Pollutants, lbs/day | | | | | |
|---|---|---|---|---|---|---|
| | **CO** | **ROCs** | **$NO_X$** | **$SO_2$** | **$PM_{10}$** | **$PM_{2.5}$** |
| **2012 Summer Emissions** | | | | | | |
| Area Source Emissions | 5.33 | 1.10 | 0.88 | 0.00 | 0.02 | 0.02 |
| Operational (Vehicle) Emissions | 245.11 | 18.84 | 27.46 | 0.30 | 48.87 | 9.50 |
| **Total Summer Emissions** | **250.44** | **19.94** | **28.34** | **0.30** | **48.89** | **9.52** |
| **2012 Winter Emissions** | | | | | | |
| Area Source Emissions | 0.69 | 0.73 | 0.82 | 0.00 | 0.00 | 0.00 |
| Operational (Vehicle) Emissions | 234.99 | 21.08 | 33.05 | 0.25 | 48.87 | 9.50 |
| **Total Winter Emissions** | **235.68** | **21.81** | **33.87** | **0.25** | **48.87** | **9.50** |
| **SCAQMD Threshold** | **550** | **55** | **55** | **150** | **150** | **55** |
| **Exceed SCAQMD Threshold?**[1] | **No/No** | **No/No** | **No/No** | **No/No** | **No/No** | **No/No** |

Source: LSA Associates, Inc., July 2009.
[1] Reporting status for summer/winter scenarios.
CO = carbon monoxide
lbs/day = pounds per day
NA = not applicable
$NO_X$ = nitrogen oxides
$PM_{10}$ = particulate matter less than 10 microns in size
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
ROCs = reactive organic compounds
SCAQMD = South Coast Air Quality Management District
$SO_2$ = sulfur dioxide

### Odors

An approximate 0.5-acre dog park is included as part of the proposed project. This small park will be located approximately 200 ft west of the existing residences in the area and will be separated from the residences by MacArthur Boulevard. A Water Quality Management Plan (WQMP) is a project design feature and a regulatory requirement that would be implemented with the proposed project to reduce or avoid impacts related to water quality (see PDF WQ-3, Section 4.10, Hydrology and Water Quality). The WQMP would include an activity restriction applicable to the proposed dog park. This restriction would include a requirement for pet owners to remove pet feces. Therefore, implementation of the proposed project would not add any long-term odor sources to the project area.

## LONG-TERM MICROSCALE (CO HOT SPOT) ANALYSIS

The long-term microscale analysis is based on the California State 1-hour CO emission concentration standard of 20.0 ppm and the California State 8-hour CO emission concentration standard of 9.0 ppm.

Vehicular trips associated with the proposed project would contribute to the congestion at intersections and along roadway segments in the project vicinity. Localized air quality effects 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.

The intersection vehicle turn volumes were used in the California Department of Transportation (Caltrans) CALINE4 model to evaluate local CO concentrations at intersections most affected by project traffic. Per EPA guidelines, the highest concentrations of the second-highest CO concentrations measured within the past 3 years were used as the background levels. At the Costa Mesa Station, the background concentrations are 4.4 ppm for the 1-hour period and 2.6 ppm for the 8-hour period.

The traffic analysis prepared by RBF Consulting (July 2009) evaluated the existing year (2009), project build-out year (2013), and General Plan build-out year traffic conditions in the project vicinity. To determine the proposed project's impact on local air quality, the CO levels were modeled at nine intersections in the project vicinity. These nine intersections represent the intersections with the highest traffic volumes in the project area. Tables H, I, and J list the CO concentrations that would result at the nine intersections for the existing year (2009), project build-out year (2013), and General Plan build-out year conditions, respectively. The CALINE4 model printouts are included in Appendix C.

As shown in Tables H, I, and J, none of the nine intersections analyzed would have 8-hour CO concentration exceeding federal and State standards of 9 ppm. The 1-hour CO concentration at these intersections would also be below the State standard of 20.0 ppm and below the federal standard of 35 ppm. The proposed project would contribute at most 0.2 ppm to the 1-hour and 0.1 ppm to the 8-hour CO concentrations at these intersections. The proposed project would not have a significant impact on local air quality for CO, and no mitigation measures are required.

## LOCALIZED SIGNIFICANCE

The following analysis was performed per SCAQMD *Final Localized Significance Threshold Methodology* (June 2003). The closest sensitive receptor to the proposed site is located to the east at a distance of approximately 166 ft (50 m). Thus, the following LST thresholds for 50 m were used: 190 lbs/day of $NO_X$, 1,864 lbs/day of CO, 11 lbs/day of $PM_{10}$, and 3 lbs/day of $PM_{2.5}$.

Table K shows the calculated emissions for the proposed operational activities (fully described above) compared to the LSTs for the North Coastal Orange County area. The LST analysis is only supposed to include on-site sources; therefore, the emissions shown include all stationary and 10 percent of the proposed project's mobile sources.

Table K shows that all operational emission rates are below the LST thresholds at 50 m. Therefore, the proposed operational activity would not result in any localized significant air quality impacts.

## Table H: Existing (2009) CO Concentrations[1]

| Intersection | Receptor to Road Centerline Distance (Meters) | Project Related Increase 1-Hour/8-Hour (ppm) | Without/With Project 1-Hour CO Concentration (ppm) | Without/With Project 8-Hour CO Concentration (ppm) | Exceeds State Standards | |
|---|---|---|---|---|---|---|
| | | | | | 1-Hr (20.0 ppm) | 8-Hr (9.0 ppm) |
| Avocado and Coast Highway | 14 / 14 | 0.0 / 0.0 | 6.6 / 6.6 | 4.1 / 4.1 | No | No |
| | 21 / 21 | 0.0 / 0.0 | 6.5 / 6.5 | 4.1 / 4.1 | No | No |
| | 14 / 14 | 0.0 / 0.0 | 6.4 / 6.4 | 4.0 / 4.0 | No | No |
| | 19 / 19 | 0.0 / 0.0 | 6.4 / 6.4 | 4.0 / 4.0 | No | No |
| Avocado and San Miguel Drive | 14 / 14 | 0.2 / 0.1 | 5.8 / 6.0 | 3.6 / 3.7 | No | No |
| | 14 / 14 | 0.1 / 0.1 | 5.6 / 5.7 | 3.4 / 3.5 | No | No |
| | 14 / 14 | 0.1 / 0.1 | 5.6 / 5.7 | 3.4 / 3.5 | No | No |
| | 14 / 14 | 0.1 / 0.0 | 5.5 / 5.6 | 3.4 / 3.4 | No | No |
| Jamboree Road and Coast Highway | 17 / 17 | 0.0 / 0.0 | 7.5 / 7.5 | 4.8 / 4.8 | No | No |
| | 14 / 14 | 0.0 / 0.0 | 7.5 / 7.5 | 4.8 / 4.8 | No | No |
| | 15 / 15 | 0.0 / 0.0 | 7.4 / 7.4 | 4.7 / 4.7 | No | No |
| | 17 / 17 | 0.0 / 0.0 | 7.0 / 7.0 | 4.4 / 4.4 | No | No |
| Jamboree Road and San Joaquin Hills | 16 / 21 | 0.1 / 0.1 | 6.1 / 6.2 | 3.8 / 3.9 | No | No |
| | 16 / 24 | 0.1 / 0.1 | 6.1 / 6.2 | 3.8 / 3.9 | No | No |
| | 21 / 15 | 0.0 / 0.0 | 6.1 / 6.1 | 3.8 / 3.8 | No | No |
| | 24 / 16 | 0.0 / 0.0 | 6.1 / 6.1 | 3.8 / 3.8 | No | No |
| MacArthur Boulevard and Coast Highway | 7 / 7 | 0.1 / 0.1 | 7.6 / 7.7 | 4.8 / 4.9 | No | No |
| | 15 / 15 | 0.0 / 0.0 | 7.5 / 7.5 | 4.8 / 4.8 | No | No |
| | 7 / 7 | 0.0 / 0.0 | 7.3 / 7.3 | 4.6 / 4.6 | No | No |
| | 15 / 15 | 0.0 / 0.0 | 7.3 / 7.3 | 4.6 / 4.6 | No | No |
| MacArthur Boulevard and Ford/Bonita Canyon | 19 / 19 | 0.0 / 0.0 | 7.4 / 7.4 | 4.7 / 4.7 | No | No |
| | 21 / 21 | 0.1 / 0.1 | 7.3 / 7.4 | 4.6 / 4.7 | No | No |
| | 28 / 28 | 0.0 / 0.0 | 7.2 / 7.2 | 4.6 / 4.6 | No | No |
| | 28 / 28 | 0.0 / 0.0 | 7.0 / 7.0 | 4.4 / 4.4 | No | No |
| MacArthur Boulevard and San Joaquin Hills | 20 / 20 | 0.0 / 0.0 | 7.0 / 7.0 | 4.4 / 4.4 | No | No |
| | 21 / 21 | 0.0 / 0.0 | 7.0 / 7.0 | 4.4 / 4.4 | No | No |
| | 17 / 22 | 0.1 / 0.0 | 6.9 / 7.0 | 4.4 / 4.4 | No | No |
| | 24 / 17 | 0.0 / 0.0 | 6.9 / 6.9 | 4.4 / 4.4 | No | No |
| MacArthur Boulevard and San Miguel Drive | 17 / 17 | 0.1 / 0.1 | 6.8 / 6.9 | 4.3 / 4.4 | No | No |
| | 19 / 19 | 0.1 / 0.1 | 6.4 / 6.5 | 4.0 / 4.1 | No | No |
| | 17 / 17 | 0.1 / 0.1 | 6.3 / 6.4 | 3.9 / 4.0 | No | No |
| | 21 / 17 | 0.1 / 0.1 | 6.3 / 6.4 | 3.9 / 4.0 | No | No |
| Marguerite and Coast Highway | 12 / 12 | 0.1 / 0.1 | 6.7 / 6.8 | 4.2 / 4.3 | No | No |
| | 17 / 17 | 0.1 / 0.1 | 6.6 / 6.7 | 4.1 / 4.2 | No | No |
| | 14 / 12 | 0.0 / 0.0 | 6.5 / 6.5 | 4.1 / 4.1 | No | No |
| | 12 / 14 | 0.1 / 0.1 | 6.4 / 6.5 | 4.0 / 4.1 | No | No |

Source: LSA Associates, Inc., July 2009.

[1] Includes ambient 1-hour concentration of 4.4 ppm and ambient 8-hour concentration of 2.6 ppm. Measured at the Costa Mesa Monitoring Station.

ppm = parts per million

## Table I: 2013 Project Build-out CO Concentrations[1]

| Intersection | Receptor to Road Centerline Distance (Meters) | Project Related Increase 1-Hour/8-Hour (ppm) | Without/With Project 1-Hour CO Concentration (ppm) | Without/With Project 8-Hour CO Concentration (ppm) | Exceeds State Standards | |
|---|---|---|---|---|---|---|
| | | | | | 1-Hr (20.0 ppm) | 8-Hr (9.0 ppm) |
| Avocado and Coast Highway | 14 / 14 | 0.0 / 0.0 | 6.3 / 6.3 | 3.9 / 3.9 | No | No |
| | 21 / 21 | 0.0 / 0.0 | 6.3 / 6.3 | 3.9 / 3.9 | No | No |
| | 19 / 19 | 0.0 / 0.0 | 6.2 / 6.2 | 3.9 / 3.9 | No | No |
| | 14 / 14 | 0.0 / 0.0 | 6.0 / 6.0 | 3.7 / 3.7 | No | No |
| Avocado and San Miguel Drive | 14 / 14 | 0.1 / 0.1 | 5.4 / 5.5 | 3.3 / 3.4 | No | No |
| | 14 / 14 | 0.1 / 0.1 | 5.3 / 5.4 | 3.2 / 3.3 | No | No |
| | 14 / 14 | 0.2 / 0.1 | 5.2 / 5.4 | 3.2 / 3.3 | No | No |
| | 14 / 14 | 0.1 / 0.0 | 5.2 / 5.3 | 3.2 / 3.2 | No | No |
| Jamboree Road and Coast Highway | 14 / 17 | 0.0 / 0.0 | 7.0 / 7.0 | 4.4 / 4.4 | No | No |
| | 17 / 14 | 0.1 / 0.0 | 6.9 / 7.0 | 4.4 / 4.4 | No | No |
| | 15 / 15 | 0.0 / 0.0 | 6.8 / 6.8 | 4.3 / 4.3 | No | No |
| | 26 / 26 | 0.1 / 0.0 | 6.5 / 6.6 | 4.1 / 4.1 | No | No |
| Jamboree Road and San Joaquin Hills | 21 / 21 | 0.1 / 0.0 | 5.9 / 6.0 | 3.7 / 3.7 | No | No |
| | 24 / 17 | 0.0 / 0.0 | 5.9 / 5.9 | 3.7 / 3.7 | No | No |
| | 15 / 24 | 0.1 / 0.1 | 5.8 / 5.9 | 3.6 / 3.7 | No | No |
| | 16 / 15 | 0.0 / 0.0 | 5.8 / 5.8 | 3.6 / 3.6 | No | No |
| MacArthur Boulevard and Coast Highway | 7 / 7 | 0.1 / 0.1 | 7.0 / 7.1 | 4.4 / 4.5 | No | No |
| | 15 / 15 | 0.0 / 0.0 | 6.9 / 6.9 | 4.4 / 4.4 | No | No |
| | 7 / 7 | 0.0 / 0.0 | 6.7 / 6.7 | 4.2 / 4.2 | No | No |
| | 15 / 15 | 0.0 / 0.0 | 6.6 / 6.6 | 4.1 / 4.1 | No | No |
| MacArthur Boulevard and Ford/Bonita Canyon | 19 / 19 | 0.1 / 0.0 | 6.5 / 6.6 | 4.1 / 4.1 | No | No |
| | 21 / 21 | 0.1 / 0.0 | 6.5 / 6.6 | 4.1 / 4.1 | No | No |
| | 28 / 28 | 0.0 / 0.0 | 6.4 / 6.4 | 4.0 / 4.0 | No | No |
| | 31 / 31 | 0.0 / 0.0 | 6.2 / 6.2 | 3.9 / 3.9 | No | No |
| MacArthur Boulevard and San Joaquin Hills | 24 / 24 | 0.0 / 0.0 | 6.3 / 6.3 | 3.9 / 3.9 | No | No |
| | 28 / 23 | 0.0 / 0.0 | 6.2 / 6.2 | 3.9 / 3.9 | No | No |
| | 23 / 28 | 0.1 / 0.1 | 6.1 / 6.2 | 3.8 / 3.9 | No | No |
| | 17 / 17 | 0.0 / 0.0 | 6.1 / 6.1 | 3.8 / 3.8 | No | No |
| MacArthur Boulevard and San Miguel Drive | 17 / 17 | 0.0 / 0.0 | 6.3 / 6.3 | 3.9 / 3.9 | No | No |
| | 19 / 19 | 0.1 / 0.0 | 5.9 / 6.0 | 3.7 / 3.7 | No | No |
| | 24 / 24 | 0.0 / 0.0 | 5.9 / 5.9 | 3.7 / 3.7 | No | No |
| | 17 / 17 | 0.0 / 0.0 | 5.8 / 5.8 | 3.6 / 3.6 | No | No |
| Marguerite and Coast Highway | 12 / 12 | 0.1 / 0.1 | 6.3 / 6.4 | 3.9 / 4.0 | No | No |
| | 17 / 17 | 0.0 / 0.0 | 6.3 / 6.3 | 3.9 / 3.9 | No | No |
| | 12 / 12 | 0.0 / 0.0 | 6.2 / 6.2 | 3.9 / 3.9 | No | No |
| | 14 / 14 | 0.0 / 0.0 | 6.2 / 6.2 | 3.9 / 3.9 | No | No |

Source: LSA Associates, Inc., July 2009.

[1] Includes ambient 1-hour concentration of 4.4 ppm and ambient 8-hour concentration of 2.6 ppm. Measured at the Costa Mesa Monitoring Station.

ppm = parts per million

## Table J: General Plan Build-out CO Concentrations[1]

| Intersection | Receptor to Road Centerline Distance (Meters) | Project Related Increase 1-Hour/8-Hour (ppm) | Without/With Project 1-Hour CO Concentration (ppm) | Without/With Project 8-Hour CO Concentration (ppm) | Exceeds State Standards | |
|---|---|---|---|---|---|---|
| | | | | | 1-Hr (20.0 ppm) | 8-Hr (9.0 ppm) |
| Avocado and Coast Highway | 14 / 14 | 0.0 / 0.0 | 5.0 / 5.0 | 3.0 / 3.0 | No | No |
| | 14 / 14 | 0.0 / 0.0 | 5.0 / 5.0 | 3.0 / 3.0 | No | No |
| | 19 / 14 | 0.0 / 0.0 | 5.0 / 5.0 | 3.0 / 3.0 | No | No |
| | 19 / 19 | 0.0 / 0.0 | 5.0 / 5.0 | 3.0 / 3.0 | No | No |
| Avocado and San Miguel Drive | 14 / 14 | 0.0 / 0.0 | 4.9 / 4.9 | 3.0 / 3.0 | No | No |
| | 14 / 14 | 0.1 / 0.1 | 4.8 / 4.9 | 2.9 / 3.0 | No | No |
| | 14 / 14 | 0.0 / 0.0 | 4.8 / 4.8 | 2.9 / 2.9 | No | No |
| | 14 / 14 | 0.0 / 0.0 | 4.8 / 4.8 | 2.9 / 2.9 | No | No |
| Jamboree Road and Coast Highway | 17 / 17 | 0.0 / 0.0 | 5.4 / 5.4 | 3.3 / 3.3 | No | No |
| | 14 / 14 | 0.0 / 0.0 | 5.4 / 5.4 | 3.3 / 3.3 | No | No |
| | 15 / 15 | 0.0 / 0.0 | 5.3 / 5.3 | 3.2 / 3.2 | No | No |
| | 26 / 26 | 0.0 / 0.0 | 5.2 / 5.2 | 3.2 / 3.2 | No | No |
| Jamboree Road and San Joaquin Hills | 15 / 15 | 0.0 / 0.0 | 5.2 / 5.2 | 3.2 / 3.2 | No | No |
| | 24 / 16 | 0.0 / 0.0 | 5.2 / 5.2 | 3.2 / 3.2 | No | No |
| | 17 / 24 | 0.1 / 0.1 | 5.1 / 5.2 | 3.1 / 3.2 | No | No |
| | 16 / 17 | 0.0 / 0.0 | 5.1 / 5.1 | 3.1 / 3.1 | No | No |
| MacArthur Boulevard and Coast Highway | 7 / 7 | 0.0 / 0.0 | 5.2 / 5.2 | 3.2 / 3.2 | No | No |
| | 15 / 15 | 0.0 / 0.0 | 5.2 / 5.2 | 3.2 / 3.2 | No | No |
| | 7 / 7 | 0.0 / 0.0 | 5.2 / 5.2 | 3.2 / 3.2 | No | No |
| | 15 / 15 | 0.0 / 0.0 | 5.1 / 5.1 | 3.1 / 3.1 | No | No |
| MacArthur Boulevard and Ford/Bonita Canyon | 19 / 19 | 0.0 / 0.0 | 5.3 / 5.3 | 3.2 / 3.2 | No | No |
| | 21 / 21 | 0.0 / 0.0 | 5.3 / 5.3 | 3.2 / 3.2 | No | No |
| | 21 / 21 | 0.0 / 0.0 | 5.2 / 5.2 | 3.2 / 3.2 | No | No |
| | 28 / 28 | 0.0 / 0.0 | 5.2 / 5.2 | 3.2 / 3.2 | No | No |
| MacArthur Boulevard and San Joaquin Hills | 23 / 23 | 0.0 / 0.0 | 5.2 / 5.2 | 3.2 / 3.2 | No | No |
| | 24 / 24 | 0.0 / 0.0 | 5.2 / 5.2 | 3.2 / 3.2 | No | No |
| | 17 / 17 | 0.0 / 0.0 | 5.2 / 5.2 | 3.2 / 3.2 | No | No |
| | 15 / 15 | 0.0 / 0.0 | 5.1 / 5.1 | 3.1 / 3.1 | No | No |
| MacArthur Boulevard and San Miguel Drive | 17 / 17 | 0.0 / 0.0 | 5.1 / 5.1 | 3.1 / 3.1 | No | No |
| | 17 / 17 | 0.0 / 0.0 | 5.0 / 5.0 | 3.0 / 3.0 | No | No |
| | 19 / 19 | 0.0 / 0.0 | 5.0 / 5.0 | 3.0 / 3.0 | No | No |
| | 21 / 21 | 0.0 / 0.0 | 5.0 / 5.0 | 3.0 / 3.0 | No | No |
| Marguerite and Coast Highway | 12 / 12 | 0.1 / 0.1 | 5.0 / 5.1 | 3.0 / 3.1 | No | No |
| | 12 / 12 | 0.0 / 0.0 | 5.0 / 5.0 | 3.0 / 3.0 | No | No |
| | 12 / 12 | 0.0 / 0.0 | 5.0 / 5.0 | 3.0 / 3.0 | No | No |
| | 15 / 15 | 0.0 / 0.0 | 5.0 / 5.0 | 3.0 / 3.0 | No | No |

Source: LSA Associates, Inc., July 2009.
[1] Includes ambient 1-hour concentration of 4.4 ppm and ambient 8-hour concentration of 2.6 ppm. Measured at the Costa Mesa Monitoring Station.
ppm = parts per million

**Table K: Summary of Operation Emissions, Localized Significance**

| | Emission Rates (lbs/day) | | | |
|---|---|---|---|---|
| | **CO** | **$NO_X$** | **$PM_{10}$** | **$PM_{2.5}$** |
| Proposed Project | 29.7 | 4.1 | 4.9 | 0.9 |
| **Localized Significance Threshold** | **1,864** | **190** | **11** | **3** |
| **Exceed Significance?** | **No** | **No** | **No** | **No** |

Source: LSA Associates, Inc., July 2009.
CO = carbon monoxide
lbs/day = pounds per day
$NO_X$ = nitrogen oxide
$PM_{10}$ = particulate matter less than 10 microns in size
$PM_{2.5}$ = particulate matter less than 2.5 microns in size

## 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 SCAQMD, the pollutants emitted from operation of the project should not exceed SCAQMD daily thresholds or cause a significant impact on air quality, or the project must already have been included in the AQMP projection. As shown below under the discussion of operational impacts, the proposed project emissions would be below the emissions thresholds established in the SCAQMD CEQA Handbook. Therefore, the project would not conflict with the AQMP, and no significant impact will result with respect to implementation of the AQMP.

## CUMULATIVE IMPACT

The proposed project area is currently in nonattainment for $O_3$, $PM_{10}$, and $PM_{2.5}$. As shown in Table E, construction emissions would exceed the SCAQMD's threshold for $NO_X$ and ROC ($O_3$ precursors). In addition, $PM_{10}$ concentrations within the project area during grading would exceed the LST threshold. The project's contribution to local and regional air pollutants related to construction emissions would be significant. Therefore, implementation of the proposed project would contribute to significant cumulative air quality impacts, and mitigation will be required. Even with implementation of all available mitigation measures, the project's contribution to cumulative construction air quality impacts would remain significant.

For a project to be consistent with the AQMP adopted by SCAQMD, the pollutants emitted from the project should not exceed SCAQMD daily thresholds or cause a significant impact on air quality, or the project must already have been included in the AQMP projection. As shown in Table G, the proposed project's operational emissions would not exceed the SCAQMD's long-term emission thresholds. Therefore, the project would not contribute to a long-term cumulative air quality impact. As shown previously in Table G, the proposed project's operational emissions would not exceed the SCAQMD's long-term emission thresholds. Therefore, the project would not contribute to a long-term cumulative adverse air quality impact. No mitigation is required.

## MITIGATION MEASURES

**Standard Conditions.** The project must comply with the following standard conditions. Therefore, implementation of these measures was included in the analysis above.

**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 402 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.

The following are the applicable Rule 403 Measures:

- 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.)
- All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least two feet of freeboard in accordance with the requirements of California Vehicle Code (CVC) Section 23114 (freeboard means vertical space between the top of the load and top of the trailer).
- Pave construction access roads at least 100 ft onto the site from main road.
- Traffic speeds on all unpaved roads shall be reduced to 15 mph or less.

**Mitigation Measures**.

**A.** Additional dust suppression measures in the SCAQMD CEQA Air Quality Handbook are included as part of the project's mitigation. These measures include the following:

- Revegetate disturbed areas with native vegetation as soon as possible.
- Increase active site watering to three times daily.
- All excavating and grading operations shall be suspended when wind speeds (as instantaneous gusts) exceed 25 mph.
- When visible soil materials are carried to adjacent streets, those streets shall be swept once per day to the extent necessary to remove the visible soil material (recommend water sweepers with reclaimed water).
- Install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash trucks and any equipment leaving the site each trip.

- All on-site roads shall be paved as soon as feasible, watered periodically, or chemically stabilized.
- The area disturbed by clearing, grading, earthmoving, or excavation operations shall be minimized at all times.

**B.** The Construction Contractor shall select the construction equipment used on site based on low-emission factors and high-energy efficiency. The Construction Contractor shall ensure that construction grading plans include a statement that all construction equipment will be tuned and maintained in accordance with the manufacturer's specifications.

**C.** The Construction Contractor shall utilize electric or alternative fuel-powered equipment in lieu of gasoline- or diesel-powered engines where feasible.

**D.** The Construction Contractor shall ensure that construction grading plans include a statement that work crews will shut off equipment when not in use. During smog season (May through October), the overall length of the construction period will be extended, thereby decreasing the size of the area prepared each day, to minimize vehicles and equipment operating at the same time.

**E.** The Construction Contractor shall time the construction activities so that construction trucks, to the extent feasible, shall avoid using the streets during peak hour; if necessary, a flagperson shall be retained to maintain safety adjacent to existing roadways.

**F.** The Construction Contractor shall support and encourage ridesharing and transit incentives for the construction crew.

**G.** Compliance with the SCAQMD Rule 1113 on the use of architectural coatings should be implemented. Emissions associated with architectural coatings would be reduced by complying with these rules and regulations, which include using pre-coated/natural-colored building materials, using water-based or low-VOC coating, and using coating transfer or spray equipment with high transfer efficiency.

## IMPACTS AFTER MITIGATION

Implementation of the standard conditions and mitigation measures provided above would reduce the construction impacts to the extent feasible; however, project and cumulative construction air quality impacts would remain significant and unavoidable.

## REFERENCES

California Air Resources Board web site: http://www.arb.ca.gov.

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Western Regional Climate Center Web Site: http://www.wrcc.dri.edu.