5.6 Air Quality

5.6 AIR QUALITY

This section addresses the air emissions generated by the construction and operation of the proposed project, and the potential impacts to air quality. The analysis also addresses the consistency of the proposed project with the air quality policies set forth within the South Coast Air Quality Management District's (SCAQMD) *2012 Air Quality Management Plan.* The analysis of project-generated air emissions focuses on whether the proposed project would cause an exceedance of an ambient air quality standard or SCAQMD significance threshold. Air quality technical data is included in Appendix 11.6, *Air Quality and Greenhouse Gas Data*.

5.6.1 EXISTING SETTING

SOUTH COAST AIR BASIN

Geography

The City of Lake Forest is located in the South Coast Air Basin (Basin), a 6,600-square mile area bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino and San Jacinto Mountains to the north and east. The Basin includes all of Orange County and the nondesert portions of Los Angeles, Riverside, and San Bernardino Counties, in addition to the San Gorgonio Pass area of Riverside County.

The extent and severity of the air pollution problem in the Basin is a function of the area's natural physical characteristics (weather and topography), as well as man-made influences (development patterns and lifestyle). Factors such as wind, sunlight, temperature, humidity, rainfall, and topography all affect the accumulation and/or dispersion of air pollutants throughout the Basin.

Climate

The general region lies in the semipermanent high-pressure zone of the eastern Pacific. As a result, the climate is mild, tempered by cool sea breezes. The climate consists of a semiarid environment with mild winters, warm summers, moderate temperatures, and comfortable humidity. Precipitation is limited to a few winter storms. The usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds. The average annual temperature varies little throughout the Basin, averaging 75 degrees Fahrenheit (°F). However, with a less-pronounced oceanic influence, the eastern inland portions of the Basin show greater variability in annual minimum and maximum temperatures. All portions of the Basin have recorded temperatures over 100°F in recent years.

Although the Basin has a semi-arid climate, the air near the surface is moist due to the presence of a shallow marine layer. Except for infrequent periods when dry, continental air is brought into the Basin by offshore winds, the ocean effect is dominant. Periods with heavy fog are frequent, and low stratus clouds, occasionally referred to as "high fog," are a characteristic climate feature. Annual average relative humidity is 70 percent at the coast and 57 percent in the eastern part of the Basin. Precipitation in the Basin is typically 9 to 14 inches annually and is rarely in the form of snow or hail

due to typically warm weather. The frequency and amount of rainfall is greater in the coastal areas of the Basin.

The height of the inversion is important in determining pollutant concentration. When the inversion is approximately 2,500 feet above sea level, the sea breezes carry the pollutants inland to escape over the mountain slopes or through the passes. At a height of 1,200 feet, the terrain prevents the pollutants from entering the upper atmosphere, resulting in a settlement in the foothill communities. Below 1,200 feet, the inversion puts a tight lid on pollutants, concentrating them in a shallow layer over the entire coastal basin. Usually, inversions are lower before sunrise than during the day. Mixing heights for inversions are lower in the summer and more persistent, being partly responsible for the high levels of ozone (O_3) observed during summer months in the Basin. Smog in southern California is generally the result of these temperature inversions combining with coastal day winds and local mountains to contain the pollutants for long periods of time, allowing them to form secondary pollutants by reacting with sunlight. The Basin has a limited ability to disperse these pollutants due to typically low wind speeds.

The area in which the project is located offers clear skies and sunshine, yet is still susceptible to air inversions. These inversions trap a layer of stagnant air near the ground, where it is then further loaded with pollutants. These inversions cause haziness, which is caused by moisture, suspended dust, and a variety of chemical aerosols emitted by trucks, automobiles, furnaces, and other sources.

LOCAL AMBIENT AIR QUALITY

The SCAQMD monitors air quality at 37 monitoring stations throughout the Basin. Each monitoring station is located within a Source Receptor Area (SRA). The communities within an SRA are expected to have similar climatology and ambient air pollutant concentrations. The proposed project is in the City of Lake Forest, which is located in SRA 19 (Saddleback Valley). The monitoring stations usually measure pollutant concentrations 10 feet above ground level; therefore, air quality is often referred to in terms of ground-level concentrations.

The monitoring station representative of this area is the Mission Viejo station, which is located approximately 3.3 miles southwest of the project site. The air pollutants measured at the Mission Viejo station site include O_3, CO, and particulates (PM_{10} and $PM_{2.5}$). Nitrogen dioxide (NO_2) is not measured at the Mission Viejo site; therefore, this pollutant has been measured at the Costa Mesa monitoring station. The air quality data monitored at the Mission Viejo and Costa Mesa stations from 2010 to 2012 are presented in Table 5.6-1, *Local Air Quality Levels*.

Carbon Monoxide. Carbon monoxide (CO) is an odorless, colorless toxic gas that is emitted by mobile and stationary sources as a result of incomplete combustion of hydrocarbons or other carbon-based fuels. In cities, automobile exhaust can cause as much as 95 percent of all CO emissions.

CO replaces oxygen in the body's red blood cells. Individuals with a deficient blood supply to the heart, patients with diseases involving heart and blood vessels, fetuses (unborn babies), and patients with chronic hypoxemia (oxygen deficiency) as seen in high altitudes are most susceptible to the adverse effects of CO exposure. People with heart disease are also more susceptible to developing

chest pains when exposed to low levels of carbon monoxide. Exposure to high levels of carbon monoxide can slow reflexes and cause drowsiness, and result in death in confined spaces at very high concentrations.

Table 5.6-1
Local Air Quality Levels

Pollutant	Primary Standard		Year	Maximum[1] Concentration	Number of Days State/Federal Std. Exceeded
	California	Federal			
Carbon Monoxide (CO) (1-Hour) [2]	20 ppm for 1 hour	35 ppm for 1 hour	2010 2011 2012	1.22 ppm 1.38 1.52	0/0 0/0 0/0
Carbon Monoxide (CO) (8-Hour) [2]	9 ppm for 8 hours	9 ppm for 8 hours	2010 2011 2012	0.90 ppm 0.95 0.79	0/0 0/0 0/0
Ozone (O_3) (1-Hour) [2]	0.09 ppm for 1 hour	NA[4]	2010 2011 2012	0.117 ppm 0.094 0.096	2/0 0/0 2/0
Ozone (O_3) (8-Hour) [2]	0.070 ppm for 8 hours	0.075 ppm for 8 hours	2010 2011 2012	0.083 ppm 0.083 0.79	2/2 5/2 6/1
Nitrogen Dioxide (NO_2) [3]	0.18 ppm for 1 hour	0.100 ppm for 1 hour	2010 2011 2012	0.070 ppm 0.061 0.075	0/NA 0/NA 0/NA
Particulate Matter (PM_{10}) [2,5,6]	50 µg/m³ for 24 hours	150 µg/m³ for 24 hours	2010 2011 2012	34.0 µg/m³ 48.0 37.0	0/0 0/0 0/0
Fine Particulate Matter ($PM_{2.5}$) [2, 6]	No Separate State Standard	35 µg/m³ for 24 hours	2010 2011 2012	19.9 µg/m³ 33.4 27.6	NM/0 NM/0 NM/0

ppm = parts per million
µg/m³ = micrograms per cubic meter
NM = Not Measured
PM_{10} = particulate matter 10 microns in diameter or less
$PM_{2.5}$ = particulate matter 2.5 microns in diameter or less
NA = Not Applicable

Notes:
1. Maximum concentration is measured over the same period as the California Standard.
2. Measurements taken at the Mission Viejo Monitoring Station (located at 26081 Via Pera, Mission Viejo, California 92691).
3. Measurements taken at the Costa Mesa Monitoring Station (located at 2850 Mesa Verde Drive East, Costa Mesa California 92626).
4. The United States Environmental Protection Agency revoked the Federal 1-hour Standard in June of 2005.
5. PM_{10} exceedances are based on State thresholds established prior to amendments adopted on June 20, 2002.
6. PM_{10} and $PM_{2.5}$ exceedances are derived from the number of samples exceeded, not days.

Source: California Air Resources Board, *Aerometric Data Analysis and Measurement System (ADAM) Air Quality Data Statistics*, http://www.arb.ca.gov/adam/welcome.html, accessed on June 17, 2013.

Ozone. O_3 occurs in two layers of the atmosphere. The layer surrounding the earth's surface is the troposphere. The troposphere extends approximately 10 miles above ground level, where it meets the second layer, the stratosphere. The stratospheric (the "good" ozone layer) extends upward from about 10 to 30 miles and protects life on earth from the sun's harmful ultraviolet rays.

"Bad" ozone is a photochemical pollutant, and needs volatile organic compounds (VOCs), NO_X, and sunlight to form; therefore, VOCs and NO_X are ozone precursors. To reduce ozone concentrations, it is necessary to control the emissions of these ozone precursors. Significant ozone formation generally requires an adequate amount of precursors in the atmosphere and a period of several hours in a stable atmosphere with strong sunlight. High ozone concentrations can form over large regions when emissions from motor vehicles and stationary sources are carried hundreds of miles from their origins.

While ozone in the upper atmosphere (stratosphere) protects the earth from harmful ultraviolet radiation, high concentrations of ground-level ozone (in the troposphere) can adversely affect the human respiratory system and other tissues. Ozone is a strong irritant that can constrict the airways, forcing the respiratory system to work hard to deliver oxygen. Individuals exercising outdoors, children, and people with pre-existing lung disease such as asthma and chronic pulmonary lung disease are considered to be the most susceptible to the health effects of ozone. Short-term exposure (lasting for a few hours) to ozone at levels typically observed in Southern California can result in aggravated respiratory diseases such as emphysema, bronchitis and asthma, shortness of breath, increased susceptibility to infections, inflammation of the lung tissue, increased fatigue, as well as chest pain, dry throat, headache, and nausea.

Nitrogen Dioxide. Nitrogen oxides (NO_X) are a family of highly reactive gases that are a primary precursor to the formation of ground-level ozone, and react in the atmosphere to form acid rain. NO_2 (often used interchangeably with NO_X) is a reddish-brown gas that can cause breathing difficulties at high levels. Peak readings of NO_2 occur in areas that have a high concentration of combustion sources (e.g., motor vehicle engines, power plants, refineries, and other industrial operations).

NO_2 can irritate and damage the lungs, and lower resistance to respiratory infections such as influenza. The health effects of short-term exposure are still unclear. However, continued or frequent exposure to NO_2 concentrations that are typically much higher than those normally found in the ambient air, may increase acute respiratory illnesses in children and increase the incidence of chronic bronchitis and lung irritation. Chronic exposure to NO_2 may aggravate eyes and mucus membranes and cause pulmonary dysfunction.

Coarse Particulate Matter (PM_{10}). PM_{10} refers to suspended particulate matter, which is smaller than 10 microns or ten one-millionths of a meter. PM_{10} arises from sources such as road dust, diesel soot, combustion products, construction operations, and dust storms. PM_{10} scatters light and significantly reduces visibility. In addition, these particulates penetrate into lungs and can potentially damage the respiratory tract. On June 19, 2003, the California Air Resources Board (CARB) adopted amendments to the statewide 24-hour particulate matter standards based upon requirements set forth in the Children's Environmental Health Protection Act (Senate Bill 25).

Fine Particulate Matter ($PM_{2.5}$). Due to recent increased concerns over health impacts related to fine particulate matter (particulate matter 2.5 microns in diameter or less), both State and Federal $PM_{2.5}$ standards have been created. Particulate matter impacts primarily affect infants, children, the elderly, and those with pre-existing cardiopulmonary disease. In 1997, the U.S. Environmental Protection Agency (EPA) announced new $PM_{2.5}$ standards. Industry groups challenged the new standard in

court and the implementation of the standard was blocked. However, upon appeal by the EPA, the United States Supreme Court reversed this decision and upheld the EPA's new standards.

On January 5, 2005, the EPA published a Final Rule in the Federal Register that designates the Basin as a nonattainment area for Federal $PM_{2.5}$ standards. On June 20, 2002, CARB adopted amendments for statewide annual ambient particulate matter air quality standards. These standards were revised/established due to increasing concerns by CARB that previous standards were inadequate, as almost everyone in California is exposed to levels at or above the current State standards during some parts of the year, and the statewide potential for significant health impacts associated with particulate matter exposure was determined to be large and wide-ranging.

SENSITIVE RECEPTORS

Sensitive populations are more susceptible to the effects of air pollution than the general population. Sensitive populations (sensitive receptors) that are in proximity to localized sources of toxics and CO are of particular concern. Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. The following types of people are most likely to be adversely affected by air pollution, as identified by CARB: children under 14, elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. Locations that may contain a high concentration of these sensitive population groups are called sensitive receptors and include residential areas, hospitals, day-care facilities, elder-care facilities, elementary schools, and parks. Sensitive receptors in the project vicinity include residential uses adjacent to the north of the project site. Additional existing sensitive receptors located in the project vicinity include single and multi-family residential homes, schools, parks, and places of worship. Sensitive receptors are depicted below in Table 5.6-2, *Sensitive Receptors*.

Table 5.6-2
Sensitive Receptors

Type	Name	Distance from Project Site (feet)	Direction from Project Site
Residential	Residential Uses	Adjoining	North
		2,500	South
		1,200	East
		2,800	West
Schools	Portola Hills Elementary School	1,400	North
	Hillside Montessori School	1,300	East
	St. Michaels Abbey Preparatory School	4,400	North
Places of Worship	Saddleback Church	4,200	South
	Church of Jesus Christ LDS	4,900	East
Parks	Foothill Ranch Community Park	2,800	West
	Concourse Park	4,300	North
	Altisima Park	4,900	East
	Pinecrest Park	4,000	South

Source: Google Earth, 2013.

5.6.2 REGULATORY FRAMEWORK

U.S. ENVIRONMENTAL PROTECTION AGENCY

The EPA is responsible for implementing the Federal Clean Air Act (FCAA), which was first enacted in 1955 and amended numerous times after. The FCAA established Federal air quality standards known as the National Ambient Air Quality Standards (NAAQS). These standards identify levels of air quality for "criteria" pollutants that are considered the maximum levels of ambient (background) air pollutants considered safe, with an adequate margin of safety, to protect the public health and welfare. The criteria pollutants are O_3, CO, NO_2, which is a form of NO_X, SO_2, which is a form of SO_x, PM_{10}, $PM_{2.5}$, and lead (Pb); refer to Table 5.6-3, *National and California Ambient Air Quality Standards*.

CALIFORNIA AIR RESOURCES BOARD

CARB administers the air quality policy in California. The California Ambient Air Quality Standards (CAAQS) were established in 1969 pursuant to the Mulford-Carrell Act. These standards, included with the NAAQS in Table 5.6-2, are generally more stringent and apply to more pollutants than the NAAQS. In addition to the criteria pollutants, CAAQS have been established for visibility reducing particulates, hydrogen sulfide, and sulfates. The California Clean Air Act (CCAA), which was approved in 1988, requires that each local air district prepare and maintain an Air Quality Management Plan (AQMP) to achieve compliance with CAAQS. These AQMP's also serve as the basis for preparation of the State Implementation Plan (SIP) for the State of California.

Like the EPA, CARB also designates areas within California as either attainment or nonattainment for each criteria pollutant based on whether the CAAQS have been achieved. Under the CCAA, areas are designated as nonattainment for a pollutant if air quality data show that a state standard for the pollutant was violated at least once during the previous three calendar years. Exceedances that are affected by highly irregular or infrequent events are not considered violations of a state standard, and are not used as a basis for designating areas as nonattainment.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

The *2012 Air Quality Management Plan* (2012 AQMP), which was adopted in December 2012, proposes policies and measures to achieve federal and state standards for improved air quality in the South Coast Air Basin and those portions of the Salton Sea Air Basin (formerly named the Southeast Desert Air Basin) that are under the South Coast Air Quality Management District's (SCAQMD's) jurisdiction. The 2012 AQMP relies on a regional and multi-level partnership of governmental agencies at the federal, state, regional, and local level. These agencies (EPA, CARB, local governments, Southern California Association of Governments [SCAG] and the SCAQMD) are the primary agencies that implement the 2012 AQMP programs. The 2012 AQMP incorporates the latest scientific and technical information and planning assumptions, including the 2012 Regional Transportation Plan/Sustainable Communities Strategy, updated emission inventory methodologies for various source categories, and SCAG's latest growth forecasts.

Table 5.6-3
National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California[1]		Federal[2]	
		Standard[3]	Attainment Status	Standards[4]	Attainment Status
Ozone (O_3)	1 Hour	0.09 ppm (180 μg/m³)	**Nonattainment**	N/A[5]	N/A[5]
	8 Hour	0.070 ppm (137 μg/m³)	Unclassified	0.075 ppm (147 μg/m³)	**Nonattainment**
Particulate Matter (PM_{10})	24 Hour	50 μg/m³	**Nonattainment**	150 μg/m³	**Nonattainment**
	Annual Arithmetic Mean	20 μg/m³	**Nonattainment**	N/A[7]	**Nonattainment**
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	No Separate State Standard		35 μg/m³	Unclassified
	Annual Arithmetic Mean	12 μg/m³	**Nonattainment**	15 μg/m³	**Nonattainment**
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m³)	Attainment	35 ppm (40 mg/m³)	Attainment
	8 Hour	9.0 ppm (10 mg/m³)	Attainment	9 ppm (10 mg/m³)	Attainment
Nitrogen Dioxide (NO_2)[6]	1 Hour	0.18 ppm (339 μg/m³)	Attainment	100 ppb (188 μg/m³)	N/A
	Annual Arithmetic Mean	0.030 ppm (57 μg/m³)	N/A	0.053 ppm (100 μg/m³)	Attainment
Sulfur Dioxide (SO_2)	1 Hour	0.25 ppm (655 μg/m³)	Attainment	75 ppb (196 μg/m³)	N/A
	3 Hour	N/A	N/A	N/A	Attainment
	24 Hour	0.04 ppm (105 μg/m³)	Attainment	0.14 ppm (for certain areas)[8]	Attainment
	Annual Arithmetic Mean	N/A	N/A	0.30 ppm (for certain areas)[8]	Attainment
Lead (Pb)	30 day average	1.5 μg/m³	Attainment	N/A	N/A
	Calendar Quarter	N/A	N/A	1.5 μg/m³	Attainment
Visibility-Reducing Particles	8 Hours (10 a.m. to 6 p.m., PST)	Extinction coefficient = 0.23 km@<70% RH	Unclassified	**No Federal Standards**	
Sulfates	24 Hour	25 μg/m3	Attainment		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 μg/m3)	Unclassified		

μg/m³ = micrograms per cubic meter; ppm = parts per million; ppb = parts per billion; km = kilometer(s); RH = relative humidity; PST = Pacific Standard Time; N/A = Not Applicable.

Notes:

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, suspended particulate matter-PM_{10} 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. In 1990, CARB identified vinyl chloride as a toxic air contaminant, but determined that there was not sufficient available scientific evidence to support the identification of a threshold exposure level. This action allows the implementation of health-protective control measures at levels below the 0.010 ppm ambient concentration specified in the 1978 standard.
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. EPA also may designate an area as *attainment/unclassifiable*, if: (1) it has monitored air quality data that show that the area has not violated the ozone standard over a three-year period; or (2) there is not enough information to determine the air quality in the area. For PM_{10}, the 24-hour standard is attained when 99 percent of the daily concentrations, averaged over the three years, are equal to or less than the standard. 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.
3. Concentration is 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 mm of mercury. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 mm of mercury (1,013.2 millibar); ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.
5. The Federal 1-hour ozone standard was revoked on June 15, 2005 in all areas except the 14 8-hour ozone nonattainment Early Action Compact (EAC) areas.
6. The Nitrogen Dioxide ambient air quality standard was amended in February 22, 2007 to lower the 1-hour standard to 0.18 ppm and establish a new annual standard of 0.030 ppm.
7. The EPA revoked the annual PM_{10} standard in 2006 (effective December 16, 2006).
8. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

Source: California Air Resources Board and U.S. Environmental Protection Agency, June 7, 2012.

The 2012 AQMP addresses several state and federal planning requirements, incorporating new scientific information, primarily in the form of updated emissions inventories, ambient measurements, and new meteorological air quality models. The 2012 AQMP highlights the reductions and the interagency planning necessary to identify additional strategies, especially in the area of mobile sources, to meet all federal criteria pollutant standards within the timeframes allowed under federal Clean Air Act. The primary task of the 2012 AQMP is to bring the Basin into attainment with federal health-based standards.

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

The Southern California Association of Governments (SCAG) is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties and serves as a forum for regional issues relating to transportation, the economy, community development, and the environment. SCAG serves as the Federally designated metropolitan planning organization (MPO) for the Southern California region and is the largest metropolitan planning organization in the United States. With respect to air quality planning, SCAG has prepared the *Regional Comprehensive Plan: Helping Communities Achieve a Sustainable Future* for the region, which includes Growth Management and Regional Mobility chapters that form the basis for the land use and transportation control portions of the 2012 AQMP. SCAG is responsible under the FCAA for determining conformity of projects, plans, and programs within the SCAQMD.

5.6.3 IMPACT THRESHOLDS AND SIGNIFICANCE CRITERIA

METHODOLOGY

Regional Air Quality

In their *CEQA Air Quality Handbook* (November 1993), the SCAQMD has established significance thresholds to assess the impact of project related air pollutant emissions. Table 5.6-4, *SCAQMD Regional Pollutant Emission Thresholds of Significance*, presents these significance thresholds. There are separate thresholds for short-term construction and long-term operational emissions. A project with daily emission rates below these thresholds is considered to have a less than significant effect on regional air quality. The SCAQMD is in the process of updating the thresholds.

Table 5.6-4
SCAQMD Regional Pollutant Emission Thresholds of Significance

Phase	Pollutant (lbs/day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Construction	75	100	550	150	150	55
Operation	55	55	550	150	150	55
CO = carbon monoxide; VOC = volatile organic compounds; NO_X = nitrogen oxides; PM_{10} = particulate matter smaller than 10 microns; $PM_{2.5}$ = particulate matter smaller than 2.5 microns						
Source: South Coast Air Quality Management District, *CEQA Air Quality Handbook*, November 1993.						

Construction

Mass daily combustion emissions, fugitive PM_{10} and $PM_{2.5}$, and off-gassing emissions were calculated using the California Emissions Estimator Model (CalEEMod), as recommended by the SCAQMD. CalEEMod separates the construction process into multiple phases, including demolition and site clearing, grading, trenching, paving, building construction, and architectural coating. Construction emissions account for on-site construction equipment emissions, haul truck trips, and worker commute trips. Construction activities were based upon construction scheduling and other preliminary construction details provided by the Applicant. Where appropriate, CalEEMod defaults were utilized. CalEEMod assumptions are provided in Appendix 11.6, *Air Quality and Greenhouse Gas Data*.

Operations

The CalEEMod software was also used to quantify the daily emissions from mobile and area sources that would occur during long-term operation of the project. Mobile source emissions calculations in CalEEMod were supplemented with traffic trips within the project's *Traffic Impact Analysis*. Area source emissions were quantified using CalEEMod default emissions and exclude emissions from wood burning fireplaces and stoves.

Local Air Quality

Localized Significance Thresholds

Localized Significance Thresholds (LSTs) were developed in response to the SCAQMD Governing Boards' Environmental Justice Enhancement Initiative (I-4). The SCAQMD provided the *Final Localized Significance Threshold Methodology* (revised July 2008) for guidance. The LST methodology assists lead agencies in analyzing localized impacts associated with project-specific level proposed projects. The SCAQMD provides the LST lookup tables for one, two, and five acre projects emitting CO, NO_X, particulate matter less than 10 microns in aerodynamic diameter (PM_{10}), and particulate matter less than 2.5 microns in aerodynamic diameter ($PM_{2.5}$). The LST methodology and associated mass rates are not designed to evaluate localized impacts from mobile sources traveling over the roadways. The SCAQMD recommends that any project over five acres should perform air quality dispersion modeling to assess impacts to nearby sensitive receptors.

Localized CO

In addition, the project would result in a local air quality impact if the project results in increased traffic volumes and/or decreases in Level of Service (LOS) that would result in an exceedance of the CO ambient air quality standards of 20 ppm for 1-hour CO concentration levels, and 9 ppm for 8-hour CO concentration levels. If the CO concentrations at potentially impacted intersections with the project are lower than the standards, then there is no significant impact. If future CO concentrations with the project are above the standard, then the project would have a significant local air quality impact.

Cumulative Emissions

The SCAQMD's *2012 AQMP* was prepared to accommodate growth, meet state and federal air quality standards, and minimize the fiscal impact that pollution control measures have on the local economy. According to the SCAQMD *CEQA Air Quality Handbook*, project-related emissions that fall below the established construction and operational thresholds should be considered less than significant unless there is pertinent information to the contrary.

If a project exceeds these emission thresholds, the SCAQMD *CEQA Air Quality Handbook* states that the significance of a project's contribution to cumulative impacts should be determined based on whether the rate of growth in average daily trips exceeds the rate of growth in population.

CEQA SIGNIFICANCE CRITERIA

The environmental analysis in this section is patterned after the Initial Study Checklist recommended by Appendix G of the *CEQA Guidelines*, as amended, and used by the City of Lake Forest in its environmental review process. The Initial Study Checklist includes questions relating to air quality. The issues presented in the Initial Study Checklist have been utilized as thresholds of significance in this section. Accordingly, a project may create a significant adverse environmental impact if it would:

- Conflict with or obstruct implementation of the applicable air quality plan; refer to Section 8.0, *Effects Found Not To Be Significant*.

- Violate any air quality standard or contribute substantially to an existing or projected air quality violation; refer to Impact Statements AQ-1 and AQ-2.

- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors); refer to Impact Statements AQ-1 and AQ-2.

- Expose sensitive receptors to substantial pollutant concentrations; refer to Impact Statement AQ-3.

- Create objectionable odors affecting a substantial number of people; refer to Section 8.0, *Effects Found Not To Be Significant*.

Based on these standards/criteria, the effects of the proposed project have been categorized as either a "less than significant impact" or a "potentially significant impact." If a potentially significant impact cannot be reduced to a less than significant level through the application of goals, policies, standards or mitigation, it is categorized as a significant and unavoidable impact. The standards used to evaluate the significance of impacts are often qualitative rather than quantitative because appropriate quantitative standards are either not available for many types of impacts or are not applicable for some types of projects.

5.6.4 OVERVIEW OF OSA PEIR AIR QUALITY ANALYSIS

The OSA PEIR analyzed potential air quality impacts (construction, operations, localized, and cumulative impacts) associated with the proposed Lake Forest Opportunities Study. The OSA PEIR determined that development within the OSA would result in the construction-related emissions. During construction, emissions would be generated by construction vehicles and equipment during clearance of a site, grading and/or excavation of a site, the construction of new structures, the installation of pipes and equipment, the application of finishes (e.g., paints), and the installation of landscaping. The clearance and grading of sites could also result in the generation of dust and particulate emissions, due to the disturbance of soil surfaces. The construction and operation of new land uses within the OSA would be subject to the rules and regulations of the SCAQMD, which requires that equipment be in good operating condition and places restrictions on construction activities to reduce dust emissions, among other requirements, to minimize the emission of air pollutants.

In terms of construction emissions, if site-specific review of the future development projects occurring on Sites 1 through 7 in the OSA identifies potentially significant air quality impacts associated with construction activities, OSA PEIR Mitigation Measures 3.3-1 through 3.3-7 would be implemented to reduce these emissions. While implementation of OSA PEIR Mitigation Measures 3.3-1 through 3.3-7 would reduce construction-related emissions, the OSA PEIR determined that they may not reduce these emissions to levels below the SCAQMD thresholds for each individual development project, as the amount of emissions generated for each project would vary depending on its size, the land area that would need to be disturbed during construction, and the length of the construction schedule. Under these conditions, no further feasible mitigation measures are available and this impact would be considered significant and unavoidable. In addition, for the criteria pollutants that would exceed the recommended SCAQMD thresholds, the health effects of these pollutants, would also need to be considered. The City would make site-specific determinations of significance during the review of these individual development projects to determine which projects for which construction emissions may exceed significance thresholds.

The OSA PEIR concluded that the estimated daily operational emissions resulting from buildout of the OSA would exceed the SCAQMD recommended thresholds of significance for CO, VOC, NO_X, and PM_{10}. The exceedance of the SCAQMD thresholds for these criteria pollutants is primarily due to the increase in motor vehicles traveling to and from the new land uses within the development sites.

Future CO concentrations near these intersections would not exceed national or state ambient air quality standards. Therefore, CO hotspots would not occur near these intersections in the future, and the contribution of the traffic-related CO associated with development within the OSA at these intersections would be less than significant.

The OSA PEIR determined that both construction- and operation-related daily emissions associated with the development projects that are planned to occur on Sites 1 through 7 are anticipated to exceed SCAQMD significance thresholds for criteria pollutants for which the Basin is in nonattainment. Under this condition, the development proposed by the OSA would also make a

cumulatively considerable contribution to these criteria pollutants. Therefore, cumulative impacts were also anticipated to be significant and unavoidable.

5.6.5 IMPACTS AND MITIGATION MEASURES

SHORT-TERM (CONSTRUCTION) AIR EMISSIONS

AQ-1 SHORT-TERM CONSTRUCTION ACTIVITIES ASSOCIATED WITH THE PROPOSED PROJECT WOULD RESULT IN AIR POLLUTANT EMISSION IMPACTS OR EXPOSE SENSITIVE RECEPTORS TO SUBSTANTIAL POLLUTANT CONCENTRATIONS.

Impact Analysis: According to the OSA PEIR (page 3.3-23) construction-related emissions would be generated by exhaust from construction vehicles and equipment, as well as the generation of dust and particulate emissions from the disturbance of soil surfaces. The OSA PEIR identified potentially significant air quality impacts associated with construction activities, and required OSA PEIR Mitigation Measures 3.3-1 through 3.3-7 to reduce these emissions. While implementation of OSA PEIR Mitigation Measures 3.3-1 through 3.3-7 would reduce construction-related emissions, the OSA PEIR (page 3.3-27) determined that they may not reduce these emissions to levels below the SCAQMD thresholds for each individual development project. Under these conditions, no further feasible mitigation measures are available and this impact would be considered significant and unavoidable. The City would make site-specific determinations of significance during the review of these individual development projects to determine which projects for which construction emissions may exceed significance thresholds. Construction emissions associated with the proposed Portola Center project are discussed below.

Temporary impacts would result from project construction activities. Short-term air emissions would result from the following activities:

- Particulate (fugitive dust) emissions from grading and building construction; and
- Exhaust emissions from the construction equipment and the motor vehicles of the construction crew.

Potential odors could arise from the diesel construction equipment used on-site, as well as from architectural coatings and asphalt off-gassing. Odors generated from the referenced sources are common in the man-made environment and are not known to be substantially offensive to adjacent receptors. Additionally, odors generated during construction activities would be temporary and are not considered to be a significant impact.

The project site consists of vacant land. The project proposes the development of 930 residential dwelling units and 10,000 square feet of commercial uses. For the purposes of analysis, the project is assumed to begin construction in late 2013 and occur over approximately four to five years.

Site preparation and grading activities would require approximately 20,000 cubic yards of earthwork per day. Due to the soil type, Phase 1 (Portola South site) would require the import of 550,000 cubic yards of soil and 550,000 cubic yards of soil export. The fill materials would be imported to

the Portola North site. Phase 2 (Portola Northwest site) would require approximately 110,000 cubic yards of import from the Portola South site and would export 110,000 cubic yards to the Portola South site. Phase 3 (Portola Northeast site) would require 440,000 cubic yards of soil imported from the Portola North site and the export of 440,000 cubic yards of fill. It should be noted that the hauling distance between the sites is less than ¼ mile.

Project construction would require excavators, graders, scrapers, and tractors during grading and clearing; pavers, rollers, and paving equipment during paving; tractors, and forklifts during building construction; and air compressors during architectural coating. Emissions for each construction phase have been quantified based upon the phase durations and equipment types. The analysis of daily construction emissions has been prepared utilizing CalEEMod. Refer to Appendix 11.6, *Air Quality/Greenhouse Gas Data*, for the CalEEMod outputs and results. Table 5.6-5, *Maximum Daily Pollutant Emissions During Construction*, presents the anticipated daily short-term construction emissions.

Air pollutants would be emitted by construction equipment and fugitive dust would be generated during demolition of the existing structures and improvements as well as during grading of the site. Emissions during the primary phases of construction were calculated using the CalEEMod program. The equipment modeled during each phase was based on the defaults in CalEEMod modified as needed to represent the project specifics. All fugitive dust calculations accounted for watering and other dust control methods required to be implemented per SCAQMD Rule 403 (refer to OSA PEIR Mitigation Measure 3.3-7).

Fugitive Dust Emissions

Fugitive dust (PM_{10} and $PM_{2.5}$) from grading and construction is expected to be short-term and would cease following completion of the proposed project improvements. Most of this material is composed of inert silicates, which are less harmful to health than the complex organic particulates released from combustion sources. These particles are either directly emitted or are formed in the atmosphere from the combustion of gases such as NO_X and SO_X combining with ammonia. The greatest amount of fugitive dust generated is expected to occur during site grading and excavation. Dust generated by such activities usually becomes more of a local nuisance than a serious health problem. Of particular concern is the amount of PM_{10} generated as a part of fugitive dust emissions.

The CalEEMod computer model calculates PM_{10} and $PM_{2.5}$ fugitive dust as part of the site earthwork activity emissions; refer to Table 5.6-5. Maximum particulate matter emissions would occur during the initial stages of construction, when grading activities would occur. With the application of OSA PEIR Mitigation Measure 3.3-7, which requires adherence to SCAQMD Rule 403 and other dust control techniques, the maximum mitigated particulate matter concentration would be 134.80 pounds per day (lbs/day) for PM_{10} in 2013 and 18.28 lbs/day for $PM_{2.5}$ in 2015. It should be noted that OSA PEIR Mitigation Measure 3.3-7 would be required, and has been modified to include additional measures and to reflect project current SCAQMD guidance. Therefore, emissions in each year are below SCAQMD thresholds of 150 lbs/day for PM_{10} and 55 lbs/day for $PM_{2.5}$. Although the unmitigated particulate matter levels are below the SCAQMD thresholds in the absence of specific dust reduction measures, the mitigation has been recommended as the Basin is nonattainment for PM_{10} and $PM_{2.5}$.

Table 5.6-5
Maximum Daily Pollutant Emissions During Construction

Emissions Source	Daily Pollutant Emissions (lbs/day)[1]					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Year 1 (2013)						
Unmitigated	81.34	592.11	498.38	0.56	182.80	22.57
Mitigated[2]	81.34	527.70	498.38	0.56	134.18	17.36
SCAQMD Construction Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Mitigated Emissions Exceed Thresholds?	***Yes***	***Yes***	***No***	***No***	***No***	***No***
Year 2 (2014)						
Unmitigated	115.63	563.16	475.21	0.61	180.94	21.20
Mitigated[2]	115.63	531.00	475.21	0.61	133.96	17.82
SCAQMD Construction Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Mitigated Emissions Exceed Thresholds?	***Yes***	***Yes***	***No***	***No***	***No***	***No***
Year 3 (2015)						
Unmitigated	123.26	305.37	318.11	0.64	49.61	19.73
Mitigated[2]	123.26	305.37	318.11	0.64	40.27	18.28
SCAQMD Construction Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Mitigated Emissions Exceed Thresholds?	***Yes***	***Yes***	***No***	***No***	***No***	***No***
Year 4 (2016)						
Unmitigated	71.00	184.39	204.35	0.43	31.94	11.85
Mitigated[2]	71.00	184.39	204.35	0.43	26.81	11.85
SCAQMD Construction Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Mitigated Emissions Exceed Thresholds?	***No***	***Yes***	***No***	***No***	***No***	***No***
Year 5 (2017)						
Unmitigated	32.47	83.66	99.08	0.21	15.29	5.33
Mitigated[2]	32.47	83.66	99.08	0.21	13.32	5.33
SCAQMD Construction Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Mitigated Emissions Exceed Thresholds?	***No***	***No***	***No***	***No***	***No***	***No***

CO = carbon monoxide; VOC = volatile organic compounds; NO_X = nitrogen oxides; PM_{10} = particulate matter smaller than 10 microns; $PM_{2.5}$ = particulate matter smaller than 2.5 microns

Notes:

1. Emissions were calculated using CalEEMod, as recommended by the SCAQMD.
2. The reduction/credits for construction emission mitigations are based on mitigation included in the CalEEMod model and as typically required by the SCAQMD through Rule 403. The mitigation includes the following: properly maintain mobile and other construction equipment; replace ground cover in disturbed areas quickly; water exposed surfaces twice daily; cover stock piles with tarps; water all haul roads twice daily; limit speeds on unpaved roads to 15 miles per hour; and use CARB certified engines.

Refer to Appendix 11.6, *Air Quality/Greenhouse Gas Data*, for assumptions used in this analysis.

Construction Exhaust Emissions

Exhaust emissions from construction activities include emissions associated with the transport of machinery and supplies to and from the project site, emissions produced on-site as the equipment is used, and emissions from trucks transporting materials to/from the site. As presented in Table 5.6-5, construction equipment and worker vehicle exhaust emissions would exceed the established SCAQMD thresholds during years 2013 through 2016. The NO_X emissions during the periods described above would result in a significant impact during construction activities due to its contribution in forming ozone.

The generation of NO_X emissions during construction is almost entirely due to engine combustion in construction equipment, haul trucks, and employee commuting. Therefore, OSA PEIR Mitigation Measures 3.3-1 through 3.3-6 (as updated based on guidance from the SCAQMD) would be required to reduce NO_X emissions to the maximum extent practicable. While OSA PEIR Mitigation Measures 3.3-1 through 3.3-6 would reduce NO_X emissions, these emissions would not be reduced below the significance thresholds. Therefore, even with implementation of the applicable mitigation measures, the NO_X emissions during construction of the project are considered significant and unavoidable.

ROG Emissions

In addition to gaseous and particulate emissions, the application of asphalt and surface coatings creates ROG emissions, which are O_3 precursors. In accordance with the methodology prescribed by the SCAQMD, the ROG emissions associated with paving and architectural coating have been quantified with the CalEEMod model. Based on the modeling, the proposed project would exceed ROG thresholds during construction years 2013 through 2015.

As required by law, all architectural coatings for the proposed project structures would comply with SCAQMD Regulation XI, Rule 1113 – *Architectural Coating*.[1] Rule 1113 provides specifications on painting practices as well as regulates the ROG content of paint. In addition to Rule 1113, Mitigation Measure AQ-1 requires the use of high-pressure-low-volume (HPLV) paint applicators with a minimum transfer efficiency of at least 50 percent and using pre-painted construction materials. However, the application of architectural coatings would still result in an exceedance of ROG emissions following implementation of Mitigation Measure AQ-1, and as a result is concluded to be a significant unavoidable impact.

Asbestos

Pursuant to guidance issued by the Governor's Office of Planning and Research, State Clearinghouse, lead agencies are encouraged to analyze potential impacts related to naturally occurring asbestos (NOA). Asbestos is a term used for several types of naturally occurring fibrous minerals that are a human health hazard when airborne. The most common type of asbestos is chrysotile, but other types such as tremolite and actinolite are also found in California. Asbestos is classified as a known human carcinogen by State, Federal, and international agencies and was identified as a toxic air contaminant by the CARB in 1986.

Asbestos can be released from serpentinite and ultramafic rocks when the rock is broken or crushed. At the point of release, the asbestos fibers may become airborne, causing air quality and human health hazards. These rocks have been commonly used for unpaved gravel roads, landscaping, fill projects, and other improvement projects in some localities. Asbestos may be released to the atmosphere due to vehicular traffic on unpaved roads, during grading for development projects, and at quarry operations. All of these activities may have the effect of releasing potentially harmful asbestos into the air. Natural weathering and erosion processes can act on asbestos bearing rock and make it easier for asbestos fibers to become airborne if such rock is disturbed.

[1] South Coast Air Quality Management District, http://www.aqmd.gov/rules/reg/reg11_tofc.html.

Serpentinite and/or ultramafic rock are known to be present in 44 of California's 58 counties. These rocks are particularly abundant in the counties of the Sierra Nevada foothills, the Klamath Mountains, and Coast Ranges. According to the Department of Conservation Division of Mines and Geology, *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos Report* (dated August 2000), the proposed project is not located in an area where NOA is likely to be present. Therefore impacts would be considered less than significant.

Total Daily Construction Emissions

In accordance with the SCAQMD Guidelines, CalEEMod was utilized to model construction emissions for ROG, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$. Construction would occur over four to five years, with the greatest emissions being generated during the first years of construction.

CalEEMod allows the user to input mitigation measures such as watering the construction area to limit fugitive dust and applying soil stabilizers to the project area. Mitigation measures selected within CalEEMod allow for certain reduction credits and result in a decrease of pollutant emissions. Reduction credits are based upon studies developed by CARB, SCAQMD, and other air quality management district's throughout California, and were programmed within the CalEEMod model. As indicated in Table 5.6-5, CalEEMod calculates the reduction associated with recommended mitigation measures.

As indicated in Table 5.6-5, NO_X emissions would exceed SCAQMD thresholds during construction. OSA PEIR Mitigation Measures 3.3-1 through 3.3-6 would be required to reduce equipment emissions. ROG emissions would also exceed SCAQMD construction thresholds. Mitigation Measure AQ-1 would be required to reduce ROG emissions. However, NO_X and ROG emissions would not be reduced to a less than significant level. Impacts would be less than significant for all other criteria pollutants emitted during project construction. Implementation of OSA PEIR Mitigation Measure 3.3-7 would further reduce fugitive dust emissions. Due to the exceedance of the SCAQMD's thresholds for ROG and NO_X, construction related air emissions would be significant and unavoidable. Additionally, it should be noted that the OSA PEIR determined that construction-related daily emissions would exceed SCAQMD significance thresholds for criteria pollutants for which the Basin is in nonattainment.

Standard Conditions of Approval: No Standard Conditions of Approval are applicable to this topical area.

Applicable OSA Mitigation Measures:

3.3-1 ~~The developer shall require by contract specifications that all diesel-powered equipment used would be retrofitted with after-treatment products (e.g., engine catalysts) to the extent that it is readily available in the South Coast Air Basin. Contract specifications language shall be reviewed by the City prior to issuance of a grading permit.~~ The following measures shall be implemented during construction to reduce NO_X related emissions. They shall be included in the Grading Plan, Building Plans, and contract specifications. Contract specification language shall be reviewed by the City prior to issuance of a grading permit.

- With the exception of engine start up, off-road diesel equipment operators shall be required to shut down their engines rather than idle for more than five minutes, and shall ensure that all off-road equipment is compliant with the CARB in-use off-road diesel vehicle regulation and SCAQMD Rule 2449.

- The following note shall be included on all grading plans: "During construction activity, where available, the contractor shall incorporate California Air Resources Board (CARB) Tier 2 or 3 certified equipment into on-site off-road construction equipment fleets according to the following:

  - Start of construction to December 31, 2014: Where available, incorporate Tier 2 and 3 equipment into the construction fleet of off-road diesel construction equipment used for the project. Where available, non-Tier 2 or 3 off-road diesel construction equipment shall be outfitted with the BACT devices certified by CARB. If CARB certified engines are not available, the project Applicant shall provide evidence to the City prior to issuance of grading permits, or within 30 days of procurement of the construction equipment fleet.

  - Post-January 1, 2015: Where available and commercially feasible, incorporate Tier 3 and 4 equipment into the construction fleet of off-road diesel construction equipment used for the project. Where available, non-Tier 3 or 4 off-road diesel construction equipment shall be outfitted with BACT devices certified by CARB.

  - A copy of each unit's certified tier specification, Best Available Control Technology (BACT) documentation, and CARB or SCAQMD operating permit shall be provided to the City at the time of mobilization of each applicable unit of equipment.

- Configure construction parking to minimize traffic interference.

- Minimize obstruction of through-traffic lanes and provide temporary traffic controls such as a flag person during all phases of construction when needed to maintain smooth traffic flow. Construction shall be planned so that lane closures on existing streets are kept to a minimum.

- Schedule construction operations affecting traffic for off-peak hours to the best extent when possible.

- Develop a traffic plan to minimize traffic flow interference from construction activities (the plan may include advance public notice of routing, use of public transportation and satellite parking areas with a shuttle service.)

- Encourage construction contractors to apply for SCAQMD Surplus Off-Road Opt-In for NO_x ("SOON") funds. Incentives could be provided for those

construction contractors who apply for AQMD "SOON" funds. The "SOON" program provides funds to accelerate clean-up of off-road diesel vehicles, such as heavy duty construction equipment. More information on this program can be found at the following website: http://www.aqmd.gov/tao/Implementation/SOONProgram.htm

(Revisions to Mitigation 3.3-1 are based on the latest guidance from the South Coast Air Quality Management District to minimize construction NO_X emissions.)

~~3.3-2 The developer shall require by contract specifications that all heavy-duty diesel-powered equipment operating and refueling at a project site within the Project Area would use low-NO_x diesel fuel to the extent that it is readily available and cost effective (up to 125 percent of the cost of California ARB diesel) in the South Coast Air Basin (this does not apply to diesel-powered trucks traveling to and from the project sites within the Project Area). Contract specification language shall be reviewed by the City prior to issuance of a grading permit.~~ *(Mitigation Measure 3.3-2 is deleted as it is outdated and has been superseded by the additions to Mitigation Measure 3.3-1, which require BACT devices to reduce NO_X emissions.)*

3.3-3 The developer shall require by contract specifications that alternative fuel construction equipment (i.e., compressed natural gas, liquid petroleum gas, and unleaded gasoline) and low-emission diesel construction equipment would be utilized to the extent that the equipment is readily available and cost effective in the South Coast Air Basin. Contract specification language shall be reviewed by the City prior to issuance of a grading permit.

3.3-4 The developer shall require by contract specifications that construction equipment engines will be maintained in good condition and in proper tune per manufacturer's specification for the duration of construction. Contract specification language shall be reviewed by the City prior to issuance of a grading permit.

3.3-5 The developer shall require by contract specifications that construction-related equipment, including heavy-duty equipment, motor vehicles, and portable equipment, shall be turned off when not in use for more than five minutes. Contract specification language shall be reviewed by the City prior to issuance of a grading permit.

3.3-6 The developer shall require by contract specifications that construction operations rely on the electricity infrastructure surrounding the construction site rather than electrical generators powered by internal combustion engines to the extent feasible. Contract specification language shall be reviewed by the City prior to issuance of a grading permit.

3.3-7 The developer shall implement dust control measures consistent with SCAQMD Rule 403—Fugitive Dust during the construction phases of new project development. Contract specification language shall be reviewed for inclusion of this language by the City prior to issuance of a grading permit. The following actions are currently recommended to implement Rule 403 and have been quantified by the SCAQMD as being able to reduce dust generation between 30 and 85 percent depending on the source of the dust generation:

- Apply water and/or approved nontoxic chemical soil stabilizers according to manufacturer's specification to all inactive construction areas (previously graded areas that have been inactive for 10 or more days).

- Replace ground cover in disturbed areas as quickly as possible.

- Enclose, cover, water ~~twice~~ three times daily, or apply approved chemical soil binders to exposed piles with 5 percent or greater silt content.

- Water trucks will be utilized on the site and shall be available to be used throughout the day during site grading to keep the soil damp enough to prevent dust being raised by the operations. Water active grading sites at least twice daily.

- Suspend all excavating and grading operations when wind speeds (as instantaneous gusts) exceed 25 miles per hour over a 30-minute period.

- All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least two feet of freeboard (i.e., minimum vertical distance between top of the load and the top of the trailer), in accordance with Section 23114 of the California Vehicle Code.

- Sweep streets at the end of the day.

- Install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash off trucks and any equipment leaving the site each trip on a gravel surface to prevent dirt and dust from impacting the surrounding areas.

- Apply water three times daily or chemical soil stabilizers according to manufacturers' specifications to all unpaved parking or staging areas or unpaved road surfaces.

- Post and enforce traffic speed limits of 15 miles per hour or less on all unpaved roads.

- All on-site roads shall be paved as soon as feasible or watered periodically or chemically stabilized.

- All delivery truck tires shall be watered down and scraped down prior to departing the job site.

- Visible dust beyond the property line which emanates from the project shall be minimized to the extent feasible.

Additional Mitigation Measures:

AQ-1 The following measures shall be implemented by the contractor to reduce ROG emissions resulting from application of architectural coatings:

- Use high-pressure-low-volume (HPLV) paint applicators with a minimum transfer efficiency of at least 50 percent;
- Use required coatings and solvents with a ROG content lower than required under Rule 1113; and
- Use pre-painted construction materials.

Level of Significance After Mitigation: Less than significant impact from construction particulate matter. Significant and Unavoidable Impact from Construction ROG and NO_X.

LONG-TERM (OPERATIONAL) AIR EMISSIONS

AQ-2 DEVELOPMENT ASSOCIATED WITH THE PROPOSED PROJECT WOULD RESULT IN SIGNIFICANT AND UNAVOIDABLE IMPACTS PERTAINING TO OPERATIONAL AIR EMISSIONS.

Impact Analysis: The OSA PEIR (pages 3.3-26 and 3.3-27) concluded that the estimated daily operational emissions resulting from buildout of the OSA would exceed the SCAQMD recommended thresholds of significance for CO, VOC, NO_X, and PM_{10}. The exceedance of the SCAQMD thresholds for these criteria pollutants is primarily due to the increase in motor vehicles traveling to and from the new land uses within the development sites. Emissions associated with the proposed Portola Center project are discussed below.

Operational emissions generated by both stationary and mobile sources would result from normal daily activities on the project site after occupation (i.e., increased concentrations of O_3, PM_{10}, and CO). Stationary area source emissions would be generated by the consumption of natural gas for space and water heating devices, the operation of landscape maintenance equipment, and the use of consumer products. Stationary energy emissions would result from energy consumption associated with the proposed project. Mobile emissions would be generated by the motor vehicles traveling to and from the project site.

Mobile Source Emissions

Mobile sources are emissions from motor vehicles, including tailpipe and evaporative emissions. Depending upon the pollutant being discussed, the potential air quality impact may be of either regional or local concern. For example, ROG, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ are all pollutants of regional concern (NO_X and ROG react with sunlight to form O_3 [photochemical smog], and wind currents readily transport SO_X, PM_{10}, and $PM_{2.5}$). However, CO tends to be a localized pollutant, dispersing rapidly at the source.

Project-generated vehicle emissions have been estimated using CalEEMod. This model predicts ROG, NO_X, PM_{10}, and $PM_{2.5}$ emissions from motor vehicle traffic associated with new or modified land uses; refer to Appendix 11.6, *Air Quality and Greenhouse Gas Data*. According to the project's *Traffic Impact Study*, the proposed project would generate 10,400 daily trips after buildout. Table 5.6-6, *Long-Term Operational Air Emissions*, presents the anticipated mobile source emissions.

Table 5.6-6
Long-Term Operational Air Emissions

Emissions Source	Pollutant (pounds/day)[1]					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Unmitigated Emissions						
Area[2]	135.23	5.55	393.33	0.76	50.56	50.55
Energy	0.96	8.17	3.48	0.05	0.66	0.66
Mobile	43.56	74.29	364.40	0.89	110.87	5.39
Total Unmitigated Emissions	***179.75***	***88.01***	***761.21***	***1.70***	***162.40***	***56.60***
Mitigated Emissions						
Area[2]	35.98	0.92	79.62	0.00	1.58	1.57
Energy	0.83	7.11	3.03	0.05	0.58	0.58
Mobile	39.08	65.43	322.61	0.76	94.82	4.63
Total Mitigated Emissions	***75.89***	***73.46***	***405.26***	***0.81***	***96.98***	***6.78***
SCAQMD Threshold	*55*	*55*	*550*	*150*	*150*	*55*
Is Threshold Exceeded? (Significant Impact?)	***Yes***	***Yes***	***No***	***No***	***No***	***No***

Notes:
1. Based on CalEEMod modeling results, worst-case seasonal emissions for area and mobile emissions have been modeled.
2. Area sources include natural gas burning fireplaces and exclude the use of wood burning fireplaces and wood burning stoves per SCAQMD Rule 445 (Wood-Burning Devices).
3. Refer to Appendix 11.6, *Air Quality and Greenhouse Gas Data*, for assumptions used in this analysis.

Stationary Source Emissions

Stationary source emissions would be generated due to an increased demand for electrical energy and natural gas with the development of the proposed project; refer to Table 5.6-6. This assumption is based on the supposition that those power plants supplying electricity to the site are utilizing fossil fuels. Electric power generating plants are distributed throughout the Basin and western United States, and their emissions contribute to the total regional pollutant burden. The primary use of natural gas by the proposed land uses would be for combustion to produce space heating, water heating, other miscellaneous heating, or air conditioning, consumer products, and landscaping.

Conclusion

Mitigation Measure GHG-1 (refer to Section 5.7, *Greenhouse Gas Emissions*) requires the project to provide pedestrian connections to the off-site circulation network, implement a trip reduction program, and provide a ride sharing program in order to reduce mobile source emissions. Furthermore, OSA PEIR Mitigation Measures GCC2 through GCC8 and additional Mitigation

Measure GHG-1 require the project to implement various energy efficiency measures that would reduce stationary source emissions. However, as shown in Table 5.6-6, the operational mitigated emissions would remain above SCAQMD thresholds for ROG and NO_X. Therefore, impacts in this regard would be significant.

Standard Conditions of Approval: No Standard Conditions of Approval are applicable to this topical area.

Applicable OSA Mitigation Measures: Refer to OSA PEIR Mitigation Measures GCC2 through GCC8 in Section 5.7, *Greenhouse Gas Emissions*.

Additional Mitigation Measures: Refer to Mitigation Measure GHG-1 in Section 5.7, *Greenhouse Gas Emissions*.

Level of Significance After Mitigation: Significant and Unavoidable Impact for ROG and NO_X emissions.

LOCALIZED EMISSIONS

AQ-3 DEVELOPMENT ASSOCIATED WITH THE PROJECT WOULD RESULT IN LOCALIZED EMISSIONS IMPACTS OR EXPOSE SENSITIVE RECEPTORS TO SUBSTANTIAL POLLUTANT CONCENTRATIONS.

Impact Analysis: The OSA PEIR (pages 3.3-19 through 3.3-22) analyzed the study intersections and determined that CO hotspots would not occur near these intersections, and the contribution of the traffic-related CO associated with the OSA would be less than significant. The OSA PEIR also determined that the OSA would potentially expose sensitive receptors to substantial pollutant concentrations and recommended that localized impacts would need to be considered. The OSA PEIR (page 3.3-24) stated that the City would make site-specific determinations of significance during the review of these individual development projects to determine which projects for which construction emissions may exceed significance thresholds. Localized impacts associated with the proposed Portola Center project are discussed below.

Localized Significance Thresholds

Localized Significance Thresholds (LSTs) were developed in response to SCAQMD Governing Boards' Environmental Justice Enhancement Initiative (I-4). The SCAQMD provided the *Final Localized Significance Threshold Methodology* (dated June 2003 [revised 2008]) for guidance. The LST methodology assists lead agencies in analyzing localized impacts associated with project-specific level proposed projects. The SCAQMD provides the LST lookup tables for one, two, and five acre projects emitting CO, NO_X, $PM_{2.5}$, or PM_{10}. The LST methodology and associated mass rates are not designed to evaluate localized impacts from mobile sources traveling over the roadways. The SCAQMD recommends that any project over five acres should perform air quality dispersion modeling to assess impacts to nearby sensitive receptors. The project is located within Sensitive Receptor Area (SRA) 19, Saddleback Valley.

The closest sensitive receptors to the proposed site are the residential uses that are adjacent to the northern project boundary (within 25 meters). If receptors are within 25 meters of the site, the methodology document states that the threshold for the 25-meter distance should be used. Table 5.6-7, *Localized Significance of Emissions*, depicts the mitigated construction-related emissions for NO_X, CO, PM_{10}, and $PM_{2.5}$ compared to the LSTs for SRA 19, Saddleback Valley. It should be noted that Table 5.6-7 uses the 5-acre LST threshold for screening purposes. Additionally, for project operations, the five-acre threshold was conservatively used for receptors of 25 meters away. The LST analysis only includes on-site sources; therefore, the operational emissions shown include area sources. As shown in Table 5.6-7, construction emissions would exceed the LSTs for NO_X, PM_{10} and $PM_{2.5}$ during the first four years of construction, despite the implementation of OSA PEIR Mitigation Measures 3.3-1, through 3.3-7 and additional Mitigation Measure AQ-1. Therefore, dispersion modeling for construction emissions would be required. It should be noted that operational emissions would not exceed the LSTs for SRA 19 with the implementation of OSA PEIR Mitigation Measures GCC2 through GCC8, and additional Mitigation Measure GHG-1. Therefore, localized significance impacts for project operations would be less than significant.

Table 5.6-7
Localized Significance of Emissions

On-Site Sources	Pollutant (pounds/day)			
	NO_X	CO	PM_{10}	$PM_{2.5}$
CONSTRUCTION				
Year 1				
Total Mitigated On-Site Emissions	527.70	498.38	134.18	17.36
Localized Significance Threshold	*197*	*1,830*	*12*	*8*
Thresholds Exceeded?	***Yes***	***No***	***Yes***	***Yes***
Year 2				
Total Mitigated On-Site Emissions	167.2	116.66	50.56	6.17
Localized Significance Threshold	*197*	*1,830*	*12*	*8*
Thresholds Exceeded?	***No***	***No***	***Yes***	***No***
Year 3				
Total Mitigated On-Site Emissions	305.37	318.11	40.27	18.28
Localized Significance Threshold	*197*	*1,830*	*12*	*8*
Thresholds Exceeded?	***Yes***	***No***	***Yes***	***Yes***
Year 4				
Total Mitigated On-Site Emissions	184.39	204.35	26.81	11.85
Localized Significance Threshold	*197*	*1,830*	*12*	*8*
Thresholds Exceeded?	***No***	***No***	***Yes***	***Yes***
Year 5				
Total Mitigated On-Site Emissions	83.66	99.08	13.32	5.33
Localized Significance Threshold	*197*	*1,830*	*12*	*8*
Thresholds Exceeded?	***No***	***No***	***No***	***No***
OPERATIONS				
Area Source Emissions	0.92	79.62	1.58	1.57
Localized Significance Threshold	*197*	*1,830*	*3.0*	*2.0*
Thresholds Exceeded?	***No***	***No***	***No***	***No***

Note:
1. The Localized Significance Threshold was determined using Appendix C of the SCAQMD *Final Localized Significant Threshold Methodology* guidance document for pollutants NO_X, CO, PM_{10}, and $PM_{2.5}$. The Localized Significance Threshold conservatively uses the 5 acre threshold, the distance to sensitive receptors (25 meters), and the source receptor area (SRA 19).

As stated above, the project site would disturb approximately 176 acres during the concurrent earthwork activities in Phases 1, 2, and 3. As a result, the size of the proposed project and the magnitude of the daily activities would exceed the maximum threshold of five acres of per day for an LST Analysis. The SCAQMD recommends that any project over five acres should perform air quality dispersion modeling to assess impacts to nearby sensitive receptors.

Localized construction emissions were estimated using the EPA AERSCREEN model to determine the worst-case concentrations at the nearest off-site sensitive receptors. Table 5.6-8, *Construction Emissions Dispersion Modeling*, shows the construction-related emissions for NO_X, CO, $PM_{2.5}$, and PM_{10} plus background concentrations, compared to the most stringent air quality standards. As shown in Table 5.6-8, construction emissions would exceed the SCAQMD localized thresholds for NO_X and PM_{10}. Therefore, although implementation of OSA PEIR Mitigation Measures 3.3-1 through 3.3-7 and additional Mitigation Measure AQ-1 would reduce emissions for NO_X, $PM_{2.5}$, and PM_{10}, emissions impacts for NO_X and PM_{10} would not be reduced to a less than significant level. As a result, the nearest sensitive receptors could be exposed to criteria pollutant concentrations that would exceed the SCAQMD localized significance thresholds for NO_X and PM_{10}, resulting in a significant and unavoidable impact during construction.

Table 5.6-8
Construction Emissions Dispersion Modeling

Emissions Source	Pollutant				
	CO		NO_X	PM_{10}	$PM_{2.5}$
	1- Hour	8- Hour	1- Hour	24-Hour	24-Hour
Maximum Modeled Concentration (µg/m³)	250.4	200.32	200.4	66.90	9.56
Highest Background Concentration (µg/m³)	1,870.00	974.00	152	N/A[1]	N/A[1]
Total Concentration	*2,120.40*	*1,174.32*	*352.4*	*66.90*	*9.56*
Standard (µg/m³)	23,000	10,000	339	10.4	10.4
Exceed Significance?	***No***	***No***	***Yes***	***Yes***	***No***

Notes:
1. The South Coast Air Basin is Nonattainment for PM_{10} and $PM_{2.5}$ and background concentrations already exceed the most stringent standards.
2. Emissions are based on the worst-case on-site emissions. Worst-case NO_X, CO, and PM_{10}, emissions would occur in Construction Year 1 and worst-case $PM_{2.5}$ emissions would occur in Year 3. Emissions also include the incorporation of OSA PEIR Mitigation Measures 3.3-1 through 3.3-7 and additional Mitigation Measure AQ-1.

Source: EPA AERSCREEN, CalEEMod worst case on-site construction emissions. Refer to Appendix 11.6, *Air Quality/Greenhouse Gas Data*, for assumptions used in this analysis.

Carbon Monoxide Hotspots

CO emissions are a function of vehicle idling time, meteorological conditions and traffic flow. Under certain extreme meteorological conditions, CO concentrations near a congested roadway or intersection may reach unhealthful levels (i.e., adversely affect residents, school children, hospital patients, the elderly, etc.). The SCAQMD requires a quantified assessment of CO hotspots when a project increases the volume-to-capacity ratio (also called the intersection capacity utilization) by 0.02 (two percent) for any intersection with an existing level of service LOS D or worse. Because traffic congestion is highest at intersections where vehicles queue and are subject to reduced speeds,

these hotspots are typically produced at intersections. Table 5.6-9, *Project Buildout Carbon Monoxide Concentrations*, provides the CO hotspot analysis results for the study intersection that warranted a CO hotspot analysis.

Table 5.6-9
Project Buildout Carbon Monoxide Concentration

Intersection	1-hour CO (ppm)[1]		8-Hour CO (ppm) [1]	
	1-hour Standard	Future + Project	8-hour Standard	Future + Project
Marguerite Parkway at El Toro Road	20 ppm	1.8	9 ppm	1.3
Portola Parkway/Santa Margarita Parkway at El Toro Road	20 ppm	2.2	9 ppm	1.6
Marguerite Parkway at Santa Margarita Parkway	20 ppm	1.9	9 ppm	1.4
Marguerite Parkway at Los Alisos Boulevard	20 ppm	1.7	9 ppm	1.3
Los Alisos Boulevard at Santa Margarita Parkway	20 ppm	1.8	9 ppm	1.3
Saddleback Ranch Road at Malabar Road	20 ppm	1.7	9 ppm	1.3
Saddleback Ranch Road at Millwood Road	20 ppm	1.7	9 ppm	1.3

Note:
1. As measured at a distance of 10 feet from the corner of the intersection predicting the highest value. Presented 1 hour CO concentrations include a background concentration of 1.38 ppm. Eight-hour concentrations are based on a persistence of 0.74 of the 1-hour concentration. Refer to Appendix 11.6, *Air Quality and Greenhouse Gas Data*.

The projected traffic volumes were modeled using the BREEZE ROADS dispersion model. The resultant values were then added to an ambient concentration. A receptor height of 1.8 meters was used in accordance with the EPA's recommendations. The calculations assume a meteorological condition of almost no wind (0.5 meters/second), a flat topological condition between the source and the receptor and a mixing height of 1,000 meters. A standard deviation of five degrees was used for the deviation of wind direction. The suburban land classification was used for the aerodynamic roughness coefficient. This follows the BREEZE ROADS user's manual definition of suburban as "regular coverage with large obstacles, open spaces roughly equal to obstacle heights, villages, mature forests." All of the above parameters are based on the standards stated in the *Transportation Project-Level Carbon Monoxide (CO Protocol)*, December 1997.

For the purposes of this analysis, the ambient concentration used in the modeling was the highest one-hour measurement (the highest concentration of the last three years data was available) of SCAQMD monitoring data at the Mission Viejo Monitoring Station. Actual future ambient CO levels may be lower due to emissions control strategies that would be implemented between now and the proposed project buildout date. Due to changing meteorological conditions over an eight-hour period which diffuses the local CO concentrations, the eight-hour CO level concentrations have been found to be typically proportional and lower than the one-hour concentrations, where it is possible to have stable atmospheric conditions last for the entire hour. Therefore, eight-hour CO levels were calculated using the locally derived persistence factor as stated in the CO Protocol. The local persistence factor is derived by calculating the highest ratio of eight-hour to one-hour maximum locally measured CO concentrations from the most recent three years of data. Of the most recent three years of data, the highest eight-hour to one-hour ratio was 0.74.

The intersection listed in Table 5.6-9 currently operates at an LOS D for peak hour activities. At proposed project buildout, these intersections would continue to operate at LOS D and project implementation would increase the volume-to-capacity ratio by 0.02 (two percent) in an unmitigated condition, requiring a CO hotspot analysis. As indicated in Table 5.6-9, CO concentrations would be well below the State and Federal standards. The modeling results are compared to the CAAQS for CO of 9 ppm on an eight-hour average and 20 ppm on a one-hour average. Neither the one-hour average nor the eight-hour average would be equaled or exceeded. Impacts in regards to CO hotspots would be less than significant.

Standard Conditions of Approval: No Standard Conditions of Approval are applicable to this topical area.

Applicable OSA Mitigation Measures: Refer to OSA PEIR Mitigation Measures 3.3-1 through 3.3-7 and GCC2 through GCC8 in Section 5.7, *Greenhouse Gas Emissions*.

Additional Mitigation Measures: Refer to Mitigation Measures AQ-1, above, and GHG-1 in Section 5.7, *Greenhouse Gas Emissions*.

Level of Significance After Mitigation: Significant and Unavoidable Impact.

5.6.6 CUMULATIVE IMPACTS

Table 4-1, *Cumulative Projects List*, identifies the related projects and other possible development in the area determined as having the potential to interact with the proposed project to the extent that a significant cumulative effect may occur. The following discussions are included per topic area to determine whether a significant cumulative effect would occur.

SHORT-TERM (CONSTRUCTION) AIR EMISSIONS

- **SHORT-TERM CONSTRUCTION ACTIVITIES ASSOCIATED WITH THE PROPOSED PROJECT AND OTHER RELATED CUMULATIVE PROJECTS, WOULD RESULT IN AIR POLLUTANT EMISSION IMPACTS OR EXPOSE SENSITIVE RECEPTORS TO SUBSTANTIAL POLLUTANT CONCENTRATIONS.**

Impact Analysis: The SCAQMD neither recommends quantified analyses of cumulative construction or operational emissions, nor does it provide separate methodologies or thresholds of significance to be used to assess cumulative construction or operational impacts. Instead, the SCAQMD recommends that a project's potential contribution to cumulative impacts should be assessed using the same significance criteria as those for project-specific impacts. Therefore, individual development projects that generate construction-related or operational emissions that exceed the SCAQMD recommended daily thresholds for project-specific impacts would also cause a cumulative considerable increase in emissions for those pollutants for which the Basin is nonattainment.

Of the projects that have been identified within the project study area, there are a number of related projects that have not been built or are currently under construction. Since the project Applicant has no control over the timing or sequencing of the related projects, any quantitative analysis to ascertain the daily construction emissions that assumes multiple, concurrent construction would be speculative. Based on the projects identified in Section 4.0, *Basis of Cumulative Analysis*, the City anticipates several construction projects. The total amount of construction and development within the City would exceed the SCAQMD's recommended thresholds of significance, resulting in a cumulative impact.

With respect to the proposed project's construction-period air quality emissions and cumulative Basin conditions, the SCAQMD has developed strategies to reduce criteria pollutant emissions outlined in the 2012 AQMP pursuant to FCAA mandates. As such, the proposed project would comply with SCAQMD Rule 403 requirements, and implement all feasible mitigation measures. In addition, the proposed project would comply with adopted 2012 AQMP emissions control measures. Per SCAQMD rules and mandates, as well as the CEQA requirement that significant impacts be mitigated to the extent feasible, these same requirements (i.e., Rule 403 compliance, the implementation of all feasible mitigation measures, and compliance with adopted 2012 AQMP emissions control measures) would also be imposed on construction projects throughout the Basin, which would include each of the related projects listed in Section 4.0, *Basis of Cumulative Analysis*.

Although compliance with SCAQMD rules and regulations would reduce construction-related impacts, the project-related construction emissions have been concluded to be significant and unavoidable for ROG and NO_X emissions during construction. Thus, it can be reasonably inferred that the project-related construction activities, in combination with those from other projects in the area, would deteriorate the local air quality and lead to cumulative construction-related impacts.

Standard Conditions of Approval: No Standard Conditions of Approval are applicable to this topical area.

Applicable OSA Mitigation Measures: Refer to OSA PEIR Mitigation Measures 3.3-1 through 3.3-7.

Additional Mitigation Measures: Refer to Mitigation Measure AQ-1.

Level of Significance After Mitigation: Significant and Unavoidable Impact.

LONG-TERM (OPERATIONAL) AIR EMISSIONS

■ DEVELOPMENT ASSOCIATED WITH THE PROPOSED PROJECT AND OTHER RELATED CUMULATIVE PROJECTS, WOULD RESULT IN SIGNIFICANT IMPACTS PERTAINING TO OPERATIONAL AIR EMISSIONS.

Impact Analysis: Due to the Basin's nonattainment status for O_3, $PM_{2.5}$, and PM_{10}, additional emissions in excess of SCAQMD thresholds under a long-term condition for ROG, NO_X, $PM_{2.5}$, and PM_{10} would be considered significant and unavoidable for cumulative impacts. ROG and NO_X emissions are projected to be above the significance thresholds for buildout conditions. Despite the

implementation of OSA PEIR Mitigation Measures GCC2 through GCC8 and additional Mitigation Measure GHG-1, project-related operational emissions have been concluded to be significant and unavoidable for ROG and NO_X. Thus, it can be reasonably inferred that the project-related operational activities, in combination with those from other projects in the area, would deteriorate the local air quality and lead to cumulative operational-related significant and unavoidable impacts.

Standard Conditions of Approval: No Standard Conditions of Approval are applicable to this topical area.

Applicable OSA Mitigation Measures: Refer to OSA PEIR Mitigation Measures GCC2 through GCC8 in Section 5.7, *Greenhouse Gas Emissions*.

***Additional Mitigation Measures*:** Refer to Mitigation Measure GHG-1 in Section 5.7, *Greenhouse Gas Emissions*.

Level of Significance After Mitigation: Significant and Unavoidable Impact.

5.6.7 SIGNIFICANT UNAVOIDABLE IMPACTS

Implementation of the proposed project would result in a significant and unavoidable impact for the following areas:

- Regional Construction Related Emissions – Activities related to construction of the project would exceed the SCAQMD daily emission threshold for regional ROG and NO_X after implementation of all feasible mitigation measures. Therefore, the construction of the project would have a significant and unavoidable impact on regional air quality. Construction emissions would not exceed the SCAQMD significance threshold for CO, SO_X, PM_{10}, and $PM_{2.5}$.

- Localized Construction Related Emission – Construction-related emissions would exceed the SCAQMD localized significance thresholds for NO_X and PM_{10} after implementation of all feasible mitigation measures. Therefore, construction would have a significant and unavoidable impact on localized significance air quality.

- Regional Operational Emissions – During project operations, the project would result in an exceedance of regional emissions thresholds. As the proposed project would generate 10,400 daily vehicle trips, mobile sources would represent the majority of the operational emissions. Mitigation Measure GHG-1 requires the project to provide pedestrian connections to the off-site circulation network, implement a trip reduction program, and provide a ride sharing program in order to reduce mobile source emissions. OSA PEIR Mitigation Measures GCC2 through GCC8 and additional Mitigation Measure GHG-1 also require the project to implement various energy efficiency measures that would reduce stationary source emissions and would reduce the potential air quality impacts to the degree technically feasible, but ROG and NO_X emissions would remain above SCAQMD significance thresholds. Therefore, due to the project size and associated vehicle trips,

operation of the proposed project would have a significant and unavoidable impact on regional air quality.

- Cumulative Emissions – As stated above, construction and operational activities would create a significant and unavoidable impact due to exceedances of SCAQMD thresholds for ROG and NO_X. Implementation of recommended OSA PEIR Mitigation Measures 3.3-1 through 3.3-7, GCC2 through GCC8, and additional Mitigation Measures AQ-1 and GHG-1 would reduce impacts; however, a significant and unavoidable impact would remain.

If the City of Lake Forest approves the project, the City shall be required to adopt findings of fact in accordance with Section 15091 of the CEQA Guidelines, as well as adopt a Statement of Overriding Considerations in accordance with Section 15093 of the CEQA Guidelines.

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