3.2 Air Quality

This section includes a description of existing air quality in the project area, a summary of applicable regulations, and analyses of potential short-term and long-term air quality impacts of the proposed project and non-clustered scenario (see Appendix C for air quality modeling data). The methods of analyzing emissions described in this section are consistent with the recommendations of the SCAQMD. Mitigation measures are recommended as necessary to reduce significant air quality impacts.

3.2.1 Environmental Setting

Regulatory Framework

The project site is located within the South Coast Air Basin (Basin). Air quality in the project area is regulated by the U.S. Environmental Protection Agency (USEPA), the California Air Resources Board (ARB), and SCAQMD. The County of Orange General Plan also contains a component in the Resources Element related to air quality.

U.S. Environmental Protection Agency

Criteria Air Pollutants

At the federal level, USEPA has been charged with implementing national air quality programs. USEPA's air quality mandates are drawn primarily from the federal Clean Air Act (CAA), which was enacted in 1970. The most recent major amendments to the CAA were made by Congress in 1990.

The CAA requires USEPA to establish National Ambient Air Quality Standards (NAAQS). USEPA has established primary and secondary NAAQS for the following criteria air pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter with an aerodynamic diameter of 10 micrometers or less (PM_{10}), fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less ($PM_{2.5}$), and lead. **Table 3.2-1** shows the NAAQS for these pollutants. The CAA also requires each state to prepare an air quality control plan, referred to as a state implementation plan (SIP). The federal Clean Air Act Amendments of 1990 (CAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is modified periodically to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins, as reported by their jurisdictional agencies. USEPA is responsible for reviewing all SIPs to determine whether they conform to the mandates of the CAA and its amendments, and to determine whether implementing the SIPs will achieve air quality goals. If USEPA determines a SIP to be inadequate, a federal implementation plan that imposes additional control measures may be prepared for the nonattainment area. If an approvable SIP is not submitted or implemented within the mandated time frame, sanctions may be applied to transportation funding and stationary sources of air pollution in the air basin.

TABLE 3.2-1
AMBIENT AIR QUALITY STANDARDS FOR CRITERIA POLLUTANTS

Pollutant	Averaging Time	California Standard	Federal Standard	Pollutant Health and Atmospheric Effects	Major Pollutant Sources
Ozone (O_3)	1 hour	0.09 ppm	---	High concentrations can directly affect lungs, causing irritation. Long-term exposure may cause damage to lung tissue.	Motor vehicles.
	8 hours	0.07 ppm	0.075 ppm		
Carbon Monoxide (CO)	1 hour	20 ppm	35 ppm	Classified as a chemical asphyxiant, CO interferes with the transfer of fresh oxygen to the blood and deprives sensitive tissues of oxygen.	Internal combustion engines, primarily gasoline-powered motor vehicles.
	8 hours	9 ppm	9.0 ppm		
Nitrogen Dioxide (NO_X)	Annual Arithmetic Mean	0.03	0.053 ppm	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown.	Motor vehicles, petroleum refining operations, industrial sources, aircraft, ships, and railroads.
	1 hour	0.18 ppm	0.100 ppm		
Sulfur Dioxide (SO_X)	Annual Arithmetic Mean	---	0.03 ppm	Irritates upper respiratory tract; injurious to lung tissue. Can yellow the leaves of plants, destructive to marble, iron, and steel. Limits visibility and reduces sunlight.	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
	1 hour	0.25 ppm	75 ppb		
	3 hours	---	0.50 ppm		
	24 hours	0.04 ppm	0.14 ppm		
Suspended Particulate Matter (PM_{10}, $PM_{2.5}$)	Annual Geometric Mean	20 µg/m^3 (PM_{10})	---	May irritate eyes and respiratory tract, decreases in lung capacity, cancer and increased mortality. Produces haze and limits visibility.	Dust and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g. wind-raised dust and ocean sprays).
	Annual Arithmetic Mean	20 µg/m^3 (PM_{10})	None for PM_{10}		
		12 µg/m^3 ($PM_{2.5}$)	15 µg/m^3 ($PM_{2.5}$)		
	24 hours	50 µg/m^3 (PM_{10})	150 µg/m^3 (PM_{10})		
		None for $PM_{2.5}$	35 µg/m^3 ($PM_{2.5}$)		
Lead (Pb)	Monthly	1.5 µg/m^3	---	Disturbs gastrointestinal system, and causes anemia, kidney disease, and neuromuscular and neurologic dysfunction (in severe cases).	*Present source*: lead smelters, battery manufacturing and recycling facilities. *Past source*: combustion of leaded gasoline.
	Quarterly	---	0.15 µg/m^3		
Sulfates (SO_4)	24 hours	25 µg/m^3	---	Decrease in ventilatory functions; aggravation of asthmatic symptoms; aggravation of cardio-pulmonary disease; vegetation damage; degradation of visibility; property damage.	Industrial processes.

ppm parts per million
µg/m^3 micorgrams per cubic meter

SOURCE: ARB, *Ambient Air Quality Standards*, September 8, 2010.

USEPA also has regulatory and enforcement jurisdiction over emission sources beyond state waters (outer continental shelf), and those that are under the exclusive authority of the federal government, such as aircraft, locomotives, and interstate trucking. USEPA's primary role at the state level is to oversee state air quality programs. USEPA sets federal vehicle and stationary source emissions standards and provides research and guidance in air pollution programs.

Hazardous Air Pollutants

USEPA has programs for identifying and regulating hazardous air pollutants (HAPs). Title III of the CAAA directed USEPA to promulgate national emissions standards for HAPs (NESHAP). The NESHAP may differ for major sources than for area sources of HAPs. Major sources are defined as stationary sources with potential to emit more than 10 tons per year (tpy) of any HAP or more than 25 tpy of any combination of HAPs; all other sources are considered area sources. The emissions standards are to be promulgated in two phases. In the first phase (1992–2000), USEPA developed technology-based emission standards designed to produce the maximum emission reduction achievable. These standards are generally referred to as requiring maximum achievable control technology (MACT). For area sources, the standards may be different, based on generally available control technology. In the second phase (2001–2008), USEPA promulgated health-risk-based emissions standards, where deemed necessary, to address risks remaining after implementation of the technology-based NESHAP standards.

The CAAA also required USEPA to promulgate vehicle or fuel standards containing reasonable requirements that control toxic emissions of, at a minimum, benzene and formaldehyde. Performance criteria were established to limit mobile-source emissions of toxics, including benzene, formaldehyde, and 1,3-butadiene. In addition, Section 219 required the use of reformulated gasoline in selected areas with the most severe ozone nonattainment conditions to further reduce mobile-source emissions. The proposed project and the non-clustered scenario do not propose any stationary sources of HAPs. Mobile source trips generated by the proposed project or non-clustered scenario would be required to comply with the above mentioned regulations.

California Air Resources Board

Criteria Air Pollutants

ARB, a department of the California Environmental Protection Agency, oversees air quality planning and control throughout California. ARB is responsible for coordination and oversight of state and local air pollution control programs in California and for implementation of the California Clean Air Act (CCAA). The CCAA, which was adopted in 1988, requires ARB to establish the California Ambient Air Quality Standards (CAAQS). ARB has established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing particulate matter, and the above-mentioned criteria air pollutants. Applicable CAAQS are shown in Table 3.2-1.

The CCAA requires all local air districts in the state to endeavor to achieve and maintain the CAAQS by the earliest practical date. The act specifies that local air districts shall focus particular attention on reducing the emissions from transportation and area-wide emission sources, and provides districts with the authority to regulate indirect sources.

Among ARB's other responsibilities are overseeing compliance by local air districts with California and federal laws; approving local air quality plans; submitting SIPs to USEPA; monitoring air quality; determining and updating area designations and maps; and setting emissions standards for new mobile sources, consumer products, small utility engines, off-road vehicles, and fuels.

Toxic Air Contaminants

Air quality regulations also focus on toxic air contaminants (TACs), or HAPs in federal terminology. A TAC is an air pollutant that may cause or contribute to an increase in mortality or serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations.

In general, for those TACs that may cause cancer, there is no concentration that does not present some risk. In other words, there is no safe level of exposure. This contrasts with the criteria air pollutants, for which acceptable levels of exposure can be determined and for which the ambient standards have been established. Instead, USEPA and ARB regulate HAPs and TACs, respectively, through statutes and regulations that generally require the use of the MACT or best available control technology (BACT) for toxics and to limit emissions. These statutes and regulations, in conjunction with additional rules set forth by the districts, establish the regulatory framework for TACs.

TACs in California are regulated primarily through the Tanner Air Toxics Act (Assembly Bill [AB] 1807 [Chapter 1047, Statutes of 1983]) and the Air Toxics Hot Spots Information and Assessment Act (Hot Spots Act) (AB 2588 [Chapter 1252, Statutes of 1987]). AB 1807 sets forth a formal procedure for ARB to designate substances as TACs. This includes research, public participation, and scientific peer review before ARB can designate a substance as a TAC. To date, ARB has identified more than 21 TACs and adopted USEPA's list of HAPs as TACs. Most recently, diesel PM was added to the ARB list of TACs. Once a TAC is identified, ARB then adopts an airborne toxics control measure (ATCM) for sources that emit that particular TAC. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate BACT to minimize emissions.

The Air Toxics Hot Spots Information and Assessment Act requires existing facilities emitting toxic substances above a specified level to prepare a toxic-emission inventory, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures.

ARB published the *Air Quality and Land Use Handbook: A Community Health Perspective* (Handbook), which provides guidance concerning land use compatibility with TAC sources (ARB, 2005). Although it is not a law or adopted policy, the Handbook offers advisory recommendations for the siting of sensitive receptors near uses associated with TACs, such as freeways and high-traffic roads, commercial distribution centers, rail yards, ports, refineries, dry

cleaners, gasoline stations, and industrial facilities, to help keep children and other sensitive populations out of harm's way.

Emission sources associated with the project would be required to comply with the state regulations discussed above. The proposed project and non-clustered scenario do not include commercial or industrial sources of TACs described above. In addition, the project site is not located close to a roadway that meets ARB's criteria. Additional details on TAC impacts are provided in Section 3.2.5.

South Coast Air Quality Management District

Criteria Air Pollutants

SCAQMD attains and maintains air quality conditions in the Basin through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The clean air strategy of SCAQMD includes preparation of plans for attainment of ambient air quality standards, adoption and enforcement of rules and regulations concerning sources of air pollution, and issuance of permits for stationary sources of air pollution. SCAQMD also inspects stationary sources of air pollution and responds to citizen complaints; monitors ambient air quality and meteorological conditions; and implements programs and regulations required by the CAA, CAAA, and CCAA. Air quality plans applicable to the proposed project and non-clustered scenario are discussed below.

Air Quality Management Plan

SCAQMD and the Southern California Association of Governments (SCAG) are responsible for preparing the air quality management plan (AQMP), which addresses federal and state CAA requirements. The AQMP details goals, policies, and programs for improving air quality in the Basin.

The 2007 AQMP was adopted by the SCAQMD Governing Board on June 1, 2007. The purpose of the 2007 AQMP for the Basin is to set forth a comprehensive program that will lead the region into compliance with federal 8-hour ozone and $PM_{2.5}$ air quality standards. ARB adopted the State Strategy for the 2007 SIP, and the 2007 AQMP as part of the SIP on September 27, 2007. On November 28, 2007, ARB submitted a SIP revision to USEPA for ozone, $PM_{2.5}$, CO, and NO_2 in the Basin; this revision is identified as the 2007 South Coast SIP. The 2007 AQMP/2007 South Coast SIP demonstrates attainment of the federal $PM_{2.5}$ standard in the Basin by 2014, and attainment of the federal 8-hour ozone standard by 2023. The SIP also includes a request of reclassification of the ozone attainment designation from "severe" to "extreme." USEPA proposed to approve the 2007 AQMP in September 2011 (USEPA, 2011a). On December 15, 2011, USEPA approved California's plan to attain the 1997 8-hour ozone NAAQS of 0.08 parts per million (ppm) in the South Coast extreme ozone nonattainment area. The plan consists of the ozone-related portions of SCAQMD's 2007 AQMP and related portions of ARB's 2007 State Strategy (USEPA, 2011b).

As a result of state and local control strategies, the Basin has not exceeded the federal CO standard since 2002. In March 2005, SCAQMD adopted a CO Redesignation Request and Maintenance Plan that provides for maintenance of the federal CO air quality standard until at

least 2015 and commits to revising the Redesignation Request and Maintenance Plan in 2013 to ensure maintenance through 2025 (SCAQMD, 2005). SCAQMD also adopted a CO emissions budget that covers 2005 through 2015. On February 24, 2006, ARB transmitted the Redesignation Request and Maintenance Plan (including the CO budgets) to USEPA for approval. On June 11, 2007, USEPA redesignated the Basin as attainment for the federal CO standard and approved the maintenance plan amendment to the SIP for the Basin (Federal Register, 2007).

SCAQMD Rules and Regulations

All projects are subject to SCAQMD rules and regulations in effect at the time of construction. Specific rules applicable to the construction anticipated under the proposed project would include the following:

Rule 401 – Visible Emissions. A person shall not discharge into the atmosphere from any single source of emission whatsoever any air contaminant for a period or periods aggregating more than three minutes in any 1 hour that is as dark or darker in shade as that designated No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines.

Rule 402 – Nuisance. A person shall not discharge from any source whatsoever such quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or that endanger the comfort, repose, health, or safety of any such persons or the public, or that cause, or have a natural tendency to cause, injury or damage to business or property. The provisions of this rule do not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals.

Rule 403 – Fugitive Dust. This rule is intended to reduce the amount of particulate matter entrained in the ambient air as a result of anthropogenic (human-made) fugitive dust sources by requiring actions to prevent, reduce, or mitigate fugitive dust emissions. Rule 403 applies to any activity or human-made condition capable of generating fugitive dust.

Rule 1113 – Architectural Coatings. No person shall apply or solicit the application of any architectural coating within the SCAQMD with VOC content in excess of the values specified in a table incorporated in the Rule.

Toxic Air Contaminants

At the local level, air pollution control or management districts may adopt and enforce ARB control measures. Under SCAQMD Regulation XIV (Toxics and Other Non-Criteria Pollutants), and in particular Rule 1401 (New Source Review), all sources that possess the potential to emit TACs are required to obtain permits from SCAQMD. Permits may be granted to these operations if they are constructed and operated in accordance with applicable regulations, including new source review standards and air toxics control measures. SCAQMD limits emissions and public exposure to TACs through a number of programs. SCAQMD prioritizes TAC-emitting stationary sources based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors.

County of Orange General Plan

The Resources Element, one of nine elements of the General Plan, contains official County policies on the conservation and management of resources. Air Resources are one of the categories included in the Resources Element. For each resource component, specific goals, objectives and policies are identified. In addition, each component includes implementation programs to address identified constraints. Relevant air quality goals objectives and policies in the General Plan are:

Goal 1: Promote optimum sustainable environmental quality standards for air resources.

Objective 1.1: To the extent feasible, attainment of federal and state air quality standards by the year 2007.

Policy 1: To develop and support programs which improve air quality or reduce air pollutant emissions.

Foothill/Trabuco Specific Plan

The F/TSP does not include any goals or objectives related to air quality.

Existing Conditions

The project area is located in Orange County, which lies within the Basin, a 6,600-square-mile coastal plain bounded by the Pacific Ocean to the southwest and the San Gabriel, San Bernardino, and San Jacinto mountains to the north and east. The Basin includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties. The ambient concentrations of air pollutants are determined by the amount of emissions released by sources and the atmosphere's ability to transport and dilute such emissions. Natural factors that affect transport and dilution include terrain, wind, atmospheric stability, and sunlight. Therefore, existing air quality conditions in the area are determined by such natural factors as topography, meteorology, and climate, in addition to the amount of emissions released by existing air pollutant sources, as discussed below.

Climate and Meteorology

Atmospheric conditions such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants. The topography and climate of Southern California combine to make the Basin an area of high air pollution potential. The Basin is a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean to the west and high mountains around the rest of the perimeter. The general region lies in the semi-permanent high-pressure zone of the eastern Pacific, resulting in a mild climate tempered by cool sea breezes with light average wind speeds. The usually mild climatological pattern is disrupted occasionally by periods of extremely hot weather, winter storms, or Santa Ana winds. During the summer months, a warm air mass frequently descends over the cool, moist marine layer produced by the interaction between the ocean's surface and the lowest layer of the atmosphere. The warm upper layer forms a cap over the cool marine layer and inhibits the pollutants in the marine layer from dispersing upward. In addition, light winds during the summer further limit ventilation. Furthermore, sunlight triggers

the photochemical reactions which produce ozone. The region experiences more days of sunlight than any other major urban area in the nation except Phoenix (SCAQMD, 2007).

Criteria Air Pollutants

ARB and USEPA currently focus on the following air pollutants as indicators of ambient air quality: ozone, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead. The pollutants are referred to as "criteria air pollutants" since they are the most prevalent air pollutants known to be injurious to human health and extensive health-effects criteria documents are available about their effects on human health and welfare.

Ozone

Ozone, the main component of photochemical smog, is primarily a summer and fall pollution problem. Ozone is not emitted directly into the air but is formed through a complex series of chemical reactions involving other compounds that are directly emitted. These directly emitted pollutants (also known as ozone precursors) include reactive organic gases (ROG) and oxides of nitrogen (NO_X). The time period required for ozone formation allows the reacting compounds to spread over a large area, producing regional pollution problems. Ozone concentrations are the cumulative result of regional development patterns rather than the result of a few significant emission sources.

Once ozone is formed in our atmosphere, it remains in the atmosphere for one or two days. Ozone is then eliminated through reaction with chemicals on the leaves of plants, attachment to water droplets as they fall to earth ("rainout"), or absorption by water molecules in clouds that later fall to earth with rain ("washout").

Short-term exposure to ozone can irritate the eyes and cause constriction of the airways. In addition to causing shortness of breath, ozone can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema.

Carbon Monoxide

CO, a colorless and odorless gas, is a non-reactive pollutant that is a product of incomplete combustion and mostly associated with motor vehicles. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia. CO measurements and modeling were important in the early 1980's when CO levels were regularly exceeded throughout California. In more recent years, CO measurements and modeling have not been a priority in most California air districts due to the retirement of older polluting vehicles, less emission from new vehicles, and improvements in fuels.

Particulate Matter

PM_{10} and $PM_{2.5}$ consist of particulate matter that is 10 microns or less in diameter and 2.5 microns or less in diameter, respectively (a micron is one-millionth of a meter). PM_{10} and $PM_{2.5}$ represent fractions of particulate matter that can be inhaled into the air passages and the lungs and can cause adverse health effects. Acute and chronic health effects associated with high

particulate levels include the aggravation of chronic respiratory diseases, heart and lung disease, and coughing, bronchitis and respiratory illnesses in children. Recent mortality studies have shown an association between morbidity and mortality and daily concentrations of particulate matter in the air. ARB has estimated that achieving the ambient air quality standards for PM_{10} could reduce premature mortality rates by 6,500 cases per year (ARB, 2002). Particulate matter can also damage materials and reduce visibility. One common source of $PM_{2.5}$ is diesel exhaust emissions.

PM_{10} consists of particulate matter emitted directly into the air, such as fugitive dust, soot, and smoke from mobile and stationary sources, construction operations, fires, and natural windblown dust; and particulate matter formed in the atmosphere by condensation and/or transformation of SO_2 and ROG. Traffic generates particulate matter emissions through entrainment of dust and dirt particles that settle onto roadways and parking lots. PM_{10} and $PM_{2.5}$ are also emitted by burning wood in residential wood stoves and fireplaces and open agricultural burning. PM_{10} can remain in the atmosphere for up to seven days before gravitational settling, rainout, and washout remove it.

Nitrogen Dioxide

NO_2 is a reddish-brown gas that is a by-product of combustion processes. Automobiles and industrial operations are the main sources of NO_2. Combustion devices emit primarily nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO_2. The combined emissions of NO and NO_2 are referred to as NO_X, which are reported as equivalent NO_2. Aside from its contribution to ozone formation, NO_2 can increase the risk of acute and chronic respiratory disease and reduce visibility. NO_2 may be visible as a coloring component of a brown cloud on high pollution days, especially in conjunction with high ozone levels.

Odorous Emissions

Odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). Offensive odors are unpleasant and can lead to public distress generating citizen complaints to local governments. Although unpleasant, offensive odors rarely cause physical harm. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source, wind speed, direction, and the sensitivity of receptors.

Existing Air Quality

SCAQMD monitors air quality conditions at 38 locations throughout the Basin. The project site is located in the Saddleback Valley Subregion. The closest monitoring station located within this subregion is the Mission Viejo monitoring station (26081 Via Pera) located approximately five miles southwest of the project site. Air quality in the project area can be characterized by ambient air quality data collected at this station. The station monitors ambient concentrations of ozone, CO, respirable particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$). Historical data from the Mission Viejo monitoring station for the most recent three years (2008 – 2010) are shown in **Table 3.2-2**.

TABLE 3.2-2
AIR QUALITY DATA SUMMARY (2008–2010)

		Monitoring Data by Year		
Pollutant	**Standard[a]**	**2008**	**2009**	**2010**
Ozone				
Highest 1 Hour Average (ppm)		0.118	0.121	0.117
Days over State Standard	0.09 ppm	9	7	2
Highest 8 Hour Average (ppm)		0.104	0.095	0.082
Days over National Standard	0.075 ppm	15	10	2
Days over State Standard	0.070 ppm	25	14	2
Carbon Monoxide				
Highest 1 Hour Average (ppm)		2	2	–
Days over National Standard	35 ppm	0	0	–
Days over State Standard	20 ppm	0	0	–
Highest 8 Hour Average (ppm)		1.10	1.00	0.90
Days over National Standard	9 ppm	0	0	0
Days over State Standard	9.0 ppm	0	0	0
Particulate Matter (PM_{10})				
Highest 24 Hour Average ($\mu g/m^3$)[b]		42.0	56.0	34.0
Days over National Standard (measured)[c]	150 $\mu g/m^3$	0	0	0
Days over State Standard (measured)[c]	50 $\mu g/m^3$	0	1	0
Annual Average ($\mu g/m^3$)[b]	20 $\mu g/m^3$	22.6	23.6	18.1
Particulate Matter ($PM_{2.5}$)				
Highest 24 Hour Average ($\mu g/m^3$)[b]		32.6	39.2	19.9
Days over National Standard (measured)[c]	35 $\mu g/m^3$	0	1	0
Annual Average ($\mu g/m^3$)[b]	12 $\mu g/m^3$	10.3	9.4	7.9

ppm = parts per million; μg/m3 = micrograms per cubic meter.
– = No data available.
[a] Generally, state standards and national standards are not to be exceeded more than once per year.
[b] Concentrations and averages represent federal statistics. State and federal statistics may differ because of different sampling methods.
[c] Measurements are usually collected every six days. Days over the standard represent the measured number of days that the standard has been exceeded.

SOURCE: ARB, 2011a.

Both ARB and USEPA use this type of monitoring data to designate areas according to their attainment status for criteria air pollutants. The purpose of these designations is to identify the areas with air quality problems and thereby initiate planning efforts for improvement. The three

basic designation categories are nonattainment, attainment, and unclassified. Unclassified is used in an area that cannot be classified on the basis of available information as meeting or not meeting the standards. In addition, the California designations include a subcategory of nonattainment-transitional, which is given to nonattainment areas that are progressing and nearing attainment.

The Basin is currently classified as a federal nonattainment area for ozone (extreme), PM_{10} (serious), and the 2006 $PM_{2.5}$ standard, and a federal attainment/maintenance area for CO (USEPA, 2009). The Basin is classified as a state nonattainment area for ozone, PM_{10}, and $PM_{2.5,}$ and an attainment area for CO. The Basin currently meets the federal and state standards for NO_2, SO_2, and lead, and is classified as an attainment area for these pollutants (ARB, 2011a).

Sensitive Land Uses

Land uses such as schools, children's daycare centers, hospitals, and convalescent homes are considered to be more sensitive to poor air quality than the general public because the population groups associated with these uses have increased susceptibility to respiratory distress. In addition, residential uses are considered more sensitive to air quality conditions than commercial and industrial uses, because people generally spend longer periods of time at their residences, resulting in greater exposure to ambient air quality conditions. Recreational land uses are considered moderately sensitive to air pollution. Exercise places a high demand on respiratory functions, which can be impaired by air pollution, even though exposure periods during exercise are generally short. In addition, noticeable air pollution can detract from the enjoyment of recreation.

The project itself would introduce sensitive receptors (residences) to the project site. Other sensitive receptors are residences surrounding the vicinity. A few residences are adjacent to the southeast boundary of the project site with Santiago Canyon Estates further to the east. The Portola Hills residential community is located south of the project site. One residence lies to the northwest of the project site boundary. The Portola Hills Elementary School is located approximately one mile south of the site.

3.2.2 Thresholds of Significance

According to Appendix G of the *CEQA Guidelines* and the County of Orange Environmental Analysis Checklist, a project would have a significant adverse effect on air quality resources if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);

- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

It was determined in the NOP/Initial Study (see Appendix A.1) that implementation of the proposed project or non-clustered scenario would have a less than significant impact related to odors. The project would involve only residential uses, which are not expected to result in objectionable odors for future residents or for the neighboring uses. Additionally, no public comments were received regarding this threshold during the 30-day NOP/Initial Study public scoping period. Therefore, no further analysis of this significance criterion is included in the EIR.

As stated in Appendix G of the *CEQA Guidelines*, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the above determinations. SCAQMD has established regional significance thresholds, as shown in **Table 3.2-3**.

TABLE 3.2-3
SCAQMD AIR QUALITY SIGNIFICANCE THRESHOLDS

	Mass Daily Thresholds (lbs/day)	
Pollutant	**Construction**	**Operations**
Oxides of Nitrogen (NO_X)	100	55
Reactive Organic Gases (ROG)	75	55
Respirable Particulate Matter (PM_{10})	150	150
Fine Particulate Matter ($PM_{2.5}$)	55	55
Oxides of Sulfur (SO_X)	150	150
Carbon Monoxide (CO)	550	550
Lead	3	3

SOURCE: SCAQMD, 2011.

For localized air quality impacts to sensitive receptors, SCAQMD recommends that projects with on-site construction-related emissions that generate the following localized pollutant concentrations at existing human receptors be considered significant:

- 10.4 micrograms per cubic meter ($\mu g/m^3$) of PM_{10} averaged over a 24-hour period;
- 10.4 $\mu g/m^3$ of $PM_{2.5}$ averaged over a 24-hour period; or
- 1.0 $\mu g/m^3$ of PM_{10} averaged over an annual period.

Since the Basin is currently in attainment of the national and state ambient air quality standards for NO_2 and CO, SCAQMD also recommends that projects with construction-related emissions that cause the following ambient air quality standards to be exceeded or contributes substantially to an exceeded standard at receptors should be considered significant:

- 0.18 ppm NO_2 averaged over a 1-hour period (state standard);
- 0.03 ppm NO_2 averaged over an annual period (state standard);
- 20 ppm CO averaged over a 1-hour period (state standard); or
- 9.0 ppm CO averaged over an 8-hour period (federal and state standard).

3.2.3 Methodology

Construction Emissions

Short-term construction-generated emissions of criteria air pollutants and ozone precursors were assessed in accordance with methods recommended by SCAQMD. Where quantification is required, regional emissions were modeled using the California Emissions Estimator Model (CalEEMod), Version 2011.1.1, as recommended by SCAQMD. CalEEMod was used to determine whether short-term construction-related emissions of criteria air pollutants associated with the proposed project and the non-clustered scenario would exceed applicable regional thresholds and where mitigation would be required. Modeling was based on project-specific data, when available. Where project-specific information was not available, reasonable assumptions and default settings were used to estimate criteria air pollutant and ozone precursor emissions. Modeling input and output files are provided in Appendix C. Predicted short-term construction-generated emissions were compared with applicable SCAQMD regional thresholds for determination of significance.

To determine if construction activities associated with the proposed project and the non-clustered scenario would create significant adverse localized air quality impacts on nearby sensitive receptors located off-site, the peak daily emissions contribution from the proposed project and non-clustered scenario were also analyzed according to SCAQMD's localized significance threshold (LST) methodology. Under this methodology, projects greater than five acres in size should perform air quality dispersion modeling to determine whether construction activities would cause or contribute to adverse localized air quality impacts. The criteria pollutants that are required to be analyzed include NO_X, CO, PM_{10}, and $PM_{2.5}$. In terms of NO_X emissions, the two principal species of NO_X are NO and NO_2, with the vast majority (95 percent) of the NO_X emissions being comprised of NO. However, because adverse health effects are primarily associated with NO_2, the analysis of localized air quality impacts associated with NO_X emissions is focused on NO_2 levels. NO, emitted from combustion sources, is converted to NO_2 by several processes, the two most important of these are: (1) the reaction of NO with ozone, and (2) the photochemical reaction of NO with hydrocarbons. When modeling NO_2 emissions from combustion sources, SCAQMD assumes that the conversion of NO to NO_2 is complete at a distance of 5,000 meters from the source.

The air quality dispersion modeling for the proposed project and non-clustered scenario construction emissions was performed in accordance with SCAQMD's LST methodology using the AERMOD atmospheric dispersion modeling system, which was adopted by the USEPA in 2005 and is recommended by SCAQMD. The construction emissions modeled for each criteria pollutant were those representing the maximum daily emissions based on the mass emissions calculations for each pollutant. Meteorological data provided by SCAQMD from its Mission Viejo station, located approximately five miles southwest of the project site, was used for dispersion modeling.

Upon determining the peak concentration levels of NO_2 (converted from NO_X) and CO that are generated by construction activities associated with the proposed project and non-clustered

scenario, these peak concentration levels were added to their respective background ambient concentrations to determine whether the most stringent applicable state and/or federal ambient air quality standards would be exceeded for each pollutant.

The determination of localized air quality impacts associated with PM_{10} and $PM_{2.5}$ generated during construction is done differently than CO and NO_2, since nearly the entire Basin exceeds the state or federal PM_{10} and $PM_{2.5}$ standards. For PM_{10} and $PM_{2.5}$, the peak concentration levels of these pollutants determined from air quality dispersion modeling at the project site are analyzed to determine whether their concentrations would exceed the established threshold set by SCAQMD.

Operational Emissions

Long-term (i.e., operational) regional emissions of criteria air pollutants and precursors, including mobile- and area-source emissions, were also quantified using the CalEEMod computer model. Area-source emissions were modeled according to the size and type of land uses proposed. Mass mobile-source emissions were modeled based on the net increase in daily vehicle trips that would result from the project. Project trip generation rates were available from the traffic impact analysis prepared for the project (RK Engineering Group, Inc., 2012; see Appendix K). Predicted long-term operational emissions were compared with applicable SCAQMD thresholds for determination of significance.

SCAQMD also recommends the use of the California Line Source Dispersion Model (CALINE4) for predicting CO concentrations, as the preferred method of estimating localized pollutant concentrations from traffic emissions at sensitive receptors near congested roadways and intersections. For each intersection analyzed, CALINE4 adds roadway-specific CO concentrations generated based on peak-hour turning volumes to background CO concentrations input by the user. For this analysis, localized CO concentrations were calculated using CALINE4 for the study area intersection analyzed in the traffic report for the proposed project that would experience the highest peak-hour traffic volumes during both the proposed project’s interim (2015) and buildout (2035) years. The vehicle emission factors used in the analysis were generated using the EMFAC2011 model, which is ARB's most recent tool for estimating emissions from on-road vehicles. The resulting CO concentrations were compared with adopted national and State ambient air quality standards.

3.2.4 Project Design Features

There are no specific project design features proposed to control air quality impacts.

3.2.5 Project Impacts

Impact 3.2.1: Conflict or obstruct implementation of air quality plans.

Significance Standard for Impact 3.2.1: Would the project conflict with or obstruct implementation of the applicable air quality plan?

Proposed Project

In preparation of the AQMP, SCAQMD and SCAG use land use designations contained in General Plan documents to forecast, inventory, and allocate regional emissions from land use and development-related sources. For purposes of analyzing consistency with the AQMP, if a proposed project would have density and vehicle trip generation substantially greater than anticipated in the General Plan, then the proposed project would conflict with the AQMP. Based on SCAQMD guidance, the analysis of a project's consistency with the AQMP entails an examination of the project's development density and associated vehicle trips. Emissions projections in the AQMP are developed based on the land use designations and development densities included for all anticipated future development in the General Plan documents for areas under SCAQMD's jurisdiction. If a proposed project is consistent with the density in the General Plan, it means that the project's emissions were analyzed accurately in the AQMP. On the other hand, if a project proposes development of a higher density (and associated trip generation), its emissions would have been understated in the AQMP. Therefore, the project would conflict with the emissions projections that the AQMP is based on. If a project's density is consistent with the General Plan, its emissions would be consistent with the assumptions in the AQMP, and the project would not conflict with SCAQMD's attainment plans.

The project site is designated by the F/TSP as UAR, and a maximum density of 65 dwelling units is allocated to the parcels that constitute the project site. The project proposes 65 dwelling units, consistent with the density restrictions of the F/TSP. The density of the proposed project is also consistent with the Suburban Residential (1B) designation in the General Plan, which allows a range of housing types, at a density of 0.5 to 18.0 dwelling units per acre. Therefore, operational emissions associated with land use development on the site, including vehicle trip generation, would have been accounted for in the AQMP.

Impact Determination: The proposed project would not conflict with the AQMP or SCAQMD's attainment plans. Impacts would be less than significant and no mitigation is necessary.

Non-Clustered Scenario

Similar to that described above for the proposed project, the non-clustered scenario would also construct 65 homes, consistent with the density restrictions of the F/TSP and the designation of Suburban Residential (1B) the General Plan.

Impact Determination: The non-clustered scenario would not conflict with the AQMP or SCAQMD's attainment plans. Impacts would be less than significant and no mitigation is necessary.

Impact 3.2.2: Violate air quality standards or contribute to an air quality violation.

Significance Standard for Impact 3.2.2: Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Proposed Project

Construction

Construction emissions are considered short term and temporary, but have the potential to represent a significant impact with respect to air quality. PM_{10} and $PM_{2.5}$ are among the pollutants of greatest localized concern with respect to construction activities. Particulate emissions from construction activities can lead to adverse health effects and nuisance concerns, such as reduced visibility and soiling of exposed surfaces. Particulate emissions can result from a variety of construction activities, including excavation, grading, demolition, vehicle travel on paved and unpaved surfaces, and vehicle and equipment exhaust. Construction emissions of PM can vary greatly depending on the level of activity, the specific operations taking place, the number and types of equipment operated, local soil conditions, weather conditions, and the amount of earth disturbance.

Emissions of ozone precursors ROG and NO_X are primarily generated from mobile sources and vary as a function of vehicle trips per day associated with delivery of construction materials, the importing and exporting of soil, vendor trips, and worker commute trips, and the types and number of heavy-duty, off-road equipment used and the intensity and frequency of their operation. A large portion of construction-related ROG emissions also result from the application of asphalt and architectural coatings and vary depending on the amount of coatings and paving applied each day.

Construction would occur in the following phases: (1) site clearing and grading; (2) construction of roadways, utilities and finished lots; and (3) construction of homes. Assuming a construction start date of early 2013, site clearing and grading would last approximately six months with two months of overlap beginning in the second quarter of 2013. Construction of utilities and paving would overlap for a period of approximately two months. Construction of homes would begin in 2014 with an average of 15 homes being built every six months. Construction is estimated to be finished by 2016; however, this estimated completion date is dependent on economic factors at the time of construction. It is anticipated that the proposed project would require approximately 1.9 million cubic yards of excavation and would be balanced on-site. Daily excavation would not exceed 20,000 cubic yards.

Accordingly, maximum daily construction emissions for the proposed project were estimated using CalEEMod, which is designed to model construction emissions for land use development projects based on building size, land use and type, and disturbed acreage, and allows for the input of project-specific information. Project-generated emissions of criteria air pollutants (e.g., PM_{10}) and precursors (i.e., ROG and NO_X) were modeled based on general information provided in the project description and by the project applicant, and default SCAQMD-recommended settings and parameters attributable to the proposed land use types and site location.

Table 3.2-4 summarizes the modeled worst-case daily emissions of criteria air pollutants and ozone precursors associated with the proposed project's construction activities (refer to Appendix C for a detailed summary of the CalEEMod modeling assumptions, inputs, and outputs).

TABLE 3.2-4
PROPOSED PROJECT: UNMITIGATED REGIONAL CONSTRUCTION EMISSIONS

	Estimated Maximum Daily Emissions (lbs/day)					
Year	**ROG**	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
2013	42.22	344.22	180.92	0.35	2,520.91	539.05
2014	5.02	29.92	23.08	0.04	2.95	2.40
2015	12.00	30.54	24.92	0.04	3.07	2.42
Maximum Regional Daily Emissions	**42.22**	**344.22**	**180.92**	**0.35**	**2,520.91**	**539.05**
Regional Significance Threshold	*75*	*100*	*550*	*150*	*150*	*55*
Significant Impact?	No	Yes	No	No	Yes	Yes

NOTE: Maximum daily emissions in 2013 would occur when the site clearing and grading phases overlap.
PM emissions calculations were supplemented with hand calculations since the project involves excavation cut and fill.
SOURCE: ESA, 2012.

As shown above in Table 3.2-4, the maximum daily level of construction-generated emissions of NO_X, PM_{10}, and $PM_{2.5}$ would exceed the applicable SCAQMD-recommended thresholds in 2013. Because mass emissions of criteria air pollutants and ozone precursors would exceed SCAQMD's recommended threshold of significance, construction-generated emissions of criteria air pollutants and precursors could violate or contribute substantially to an existing or projected air quality violation. Also, construction emissions of criteria air pollutants and precursors could expose sensitive receptors to substantial pollutant concentrations, particularly when grading and other ground-disturbance activities occur near adjacent land uses.

As shown in **Table 3.2-5**, construction emissions would be significant even after implementation of Mitigation Measures MM 3.2-1 and MM 3.2-2.

TABLE 3.2-5
PROPOSED PROJECT: MITIGATED REGIONAL CONSTRUCTION EMISSIONS

	Estimated Maximum Daily Emissions (lbs/day)					
Year	**ROG**	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
2013	34.34	186.53	199.16	0.37	163.20	43.53
2014	8.70	26.55	28.79	0.05	2.69	2.14
2015	15.89	27.92	30.79	0.05	2.95	2.30
Maximum Regional Daily Emissions	**34.34**	**186.53**	**199.16**	**0.37**	**163.20**	**43.53**
Regional Significance Threshold	*75*	*100*	*550*	*150*	*150*	*55*
Significant Impact?	No	Yes	No	No	Yes	No

NOTE: Maximum daily emissions in 2013 would occur when the site clearing and grading phases overlap. Mitigation reductions were applied to the maximum daily emissions.
SOURCE: ESA, 2012.

Operations

Implementation of the proposed project would result in long-term regional emissions of criteria air pollutants and ozone precursors associated with area sources, such as natural gas consumption, landscaping, applications of architectural coatings, and consumer products, in addition to operational vehicle-exhaust emissions. According to the traffic impact analysis prepared for the project, full buildout would result in 780 additional vehicle trips per day (RK Engineering Group, Inc., 2012).

Operations emissions were modeled using CalEEMod, as recommended by SCAQMD. Model defaults were adjusted to reflect project-specific data, where available, including the sizes and types of proposed land uses. Modeled operations emissions are presented in **Table 3.2-6 (**refer to Appendix C for a detailed summary of the CalEEMod modeling assumptions, inputs, and outputs).

TABLE 3.2-6
PROPOSED PROJECT: OPERATIONAL EMISSIONS

	Estimated Emissions (lbs/day)					
Emissions Source	**ROG**	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Area Sources	2.87	0.06	5.51	<0.01	0.12	0.12
Natural Gas Combustion	0.08	0.69	0.30	<0.01	0.06	0.06
Mobile Sources	5.30	10.56	51.66	0.11	13.38	0.94
Total Emissions	**8.25**	**11.31**	**57.47**	**0.11**	**13.56**	**1.12**
Regional Significance Threshold	*55*	*55*	*550*	*150*	*100*	*55*
Significant Impact?	No	No	No	No	No	No

NOTE: Emissions would be different during summer and winter. Maximum daily emissions of ROG, NO_X, and SO_2 would be higher during the winter while emissions of CO would be higher in the summer. Maximum emissions are shown for the respective seasons.
SOURCE: ESA, 2012.

As shown in Table 3.2-5, implementation of the proposed project would result in a net increase in long-term regional emissions of criteria air pollutants and ozone precursors that are below SCAQMD's applicable thresholds. Therefore, the project's operational emissions would not result in or substantially contribute to emissions concentrations that exceed the NAAQS and CAAQS and no mitigation would be required.

Impact Determination: Construction of the proposed project would violate air quality standards related to NO_X, PM_{10}, and $PM_{2.5}$, resulting in a significant air quality impact. Implementation of Mitigation Measures MM 3.2-1 through MM 3.2-3 would reduce construction emissions of $PM_{2.5}$ below a level of significance; however, impacts related to NO_X and PM_{10} would remain significant after mitigation has been implemented. Because the proposed project would have some significant impacts that would not be mitigated to a less than significant level, if it decided to approve the project, the Board of Supervisors would be required to adopt a statement of overriding considerations under CEQA Section 20181(B) and *CEQA Guidelines* Section 15093 determining that the project's benefits outweigh its significant impacts on the environment.

Operation of the proposed project would have a less than significant impact related to air quality standards or violations, and no mitigation would be required.

Non-Clustered Scenario

Construction

Construction activities for the non-clustered scenario would require approximately 725,000 cubic yards of excavation and would require the export of 78,500 cubic yards of soil to balance the site. Daily excavation would not exceed 8,000 cubic yards. It was assumed that soil would be exported to a site within 20 miles of the project, consistent with CalEEMod default settings. The excavated materials would be hauled from the site in haul trucks with a capacity of 15 cubic yards. Typical hauling schedule would include up to 200 trucks per day (8:00 A.M. to 5:00 P.M.) for the non-clustered scenario.

Construction of the non-clustered scenario would also begin in the second quarter of 2013, with the first two phases being completed by the last quarter of 2013. Similar to the proposed project, site clearing and grading would occur over six months with a two month overlap between the two phases. Construction of utilities and paving would overlap for a period of approximately two months. Under the non-clustered scenario, construction of homes would begin the first quarter of 2014, with an average of five homes being constructed every six months. As the non-clustered scenario would be all custom homes, development would be scattered depending on the needs of the individual home buyer. The non-clustered scenario is anticipated to be completed by mid-2020. However, similar to the proposed project, this is dependent on economic factors at the time of construction.

Table 3.2-7 summarizes the modeled worst-case daily emissions of criteria air pollutants and ozone precursors associated with construction activities (refer to Appendix C for a detailed summary of the CalEEMod modeling assumptions, inputs, and outputs).

TABLE 3.2-7
NON-CLUSTERED SCENARIO: UNMITIGATED REGIONAL CONSTRUCTION EMISSIONS

	Estimated Maximum Daily Emissions (lbs/day)					
Year	**ROG**	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
2013	45.91	383.53	203.56	0.41	286.13	33.68
2014	5.02	29.92	23.08	0.04	2.95	2.40
2015	4.63	27.93	22.64	0.04	2.74	2.19
2016	4.28	26.09	22.25	0.04	2.54	1.99
2017	3.97	24.39	21.92	0.04	2.36	1.81
2018	3.70	22.82	21.64	0.04	2.19	1.62
2019	3.46	21.37	21.38	0.04	2.03	1.46
2020	10.53	21.74	23.26	0.04	2.10	1.43
Maximum Regional Daily Emissions	**45.91**	**383.53**	**203.56**	**0.41**	**286.13**	**33.68**
Regional Significance Threshold	*75*	*100*	*550*	*150*	*150*	*55*
Significant Impact?	No	Yes	No	No	Yes	No

NOTE: Maximum daily emissions in 2013 would occur when the site clearing and grading phases overlap.
PM emissions calculations assume compliance with SCAQMD Rule 403.
SOURCE: ESA, 2012.

As shown above in Table 3.2-6, the maximum daily level of construction-generated emissions of NO_X and PM_{10} would exceed the applicable SCAQMD-recommended thresholds in 2013. Because mass emissions of criteria air pollutants and ozone precursors would exceed SCAQMD's recommended threshold of significance, construction-generated emissions of criteria air pollutants and precursors could violate or contribute substantially to an existing or projected air quality violation. Also, construction emissions of criteria air pollutants and precursors could expose sensitive receptors to substantial pollutant concentrations, particularly when grading and other ground-disturbance activities occur near adjacent land uses. As shown in **Table 3.2-8**, construction emissions would be significant even after implementation of Mitigation Measures MM 3.2-1 and MM 3.2-2.

TABLE 3.2-8
NON-CLUSTERED SCENARIO: MITIGATED REGIONAL CONSTRUCTION EMISSIONS

	Estimated Maximum Daily Emissions (lbs/day)					
Year	**ROG**	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
2013	32.32	214.24	210.07	0.41	257.27	19.07
2014	5.02	29.92	23.08	0.04	2.95	2.40
2015	4.63	27.93	22.64	0.04	2.74	2.19
2016	4.28	26.09	22.25	0.04	2.54	1.99
2017	3.97	24.39	21.92	0.04	2.36	1.81
2018	3.70	22.82	21.64	0.04	2.19	1.62
2019	3.46	21.37	21.38	0.04	2.03	1.46
2020	10.53	21.74	23.26	0.04	2.10	1.43
Maximum Regional Daily Emissions	**32.32**	**214.24**	**210.07**	**0.41**	**257.27**	**19.07**
Regional Significance Threshold	*75*	*100*	*550*	*150*	*150*	*55*
Significant Impact?	No	Yes	No	No	Yes	No

NOTE: Maximum daily emissions in 2013 would occur when the site clearing and grading phases overlap. Mitigation reductions were applied to the maximum daily emissions.
SOURCE: ESA, 2012.

Operations

Similar to that described above for the proposed project, implementation of the non-clustered scenario would result in long-term regional emissions of criteria air pollutants and ozone precursors associated with area sources, such as natural gas consumption, landscaping, applications of architectural coatings, and consumer products, in addition to operational vehicle-exhaust emissions. The operational emissions for the non-clustered scenario would be the same as the proposed project; however, complete buildout of the non-clustered would not occur until 2020. In contrast, the proposed project would be operational in 2016. Emissions in the later years would be lower due to fleet turnover and improvements in fuel efficiency. Operational emissions associated with the non-clustered scenario are presented in **Table 3.2-9** (refer to Appendix C for a detailed summary of the CalEEMod modeling assumptions, inputs, and outputs).

TABLE 3.2-9
NON-CLUSTERED SCENARIO: OPERATIONAL EMISSIONS

	Estimated Emissions (lbs/day)					
Air Pollutant	**ROG**	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Area Sources	2.73	0.06	5.44	<0.01	0.03	0.03
Natural Gas Combustion	0.08	0.69	0.30	<0.01	0.06	0.06
Mobile Sources	4.35	7.39	37.97	0.11	13.40	0.63
Total	**7.16**	**8.14**	**43.71**	**0.11**	**13.49**	**0.72**
Regional Significance Threshold	*55*	*55*	*550*	*150*	*100*	*55*
Significant Impact?	No	No	No	No	No	No

NOTE: Emissions would be different during summer and winter. Maximum daily emissions of ROG, NO_X, and SO_2 would be higher during the winter while emissions of CO would be higher in the summer. Maximum emissions are shown for the respective seasons.
SOURCE: ESA, 2012.

As shown in Table 3.2-9, implementation of the non-clustered scenario would result in a net increase in long-term regional emissions of criteria air pollutants and ozone precursors that are below SCAQMD's applicable thresholds. Therefore, operational emissions would not result in or substantially contribute to emissions concentrations that exceed the NAAQS and CAAQS, and no mitigation would be required.

Impact Determination: Construction of the non-clustered scenario would violate air quality standards related to NO_X and PM_{10}, resulting in a significant air quality impact. Implementation of Mitigation Measures MM 3.2-1 through MM 3.2-3 would reduce construction emissions of NO_X and PM_{10}; however, impacts would remain significant after mitigation has been implemented. Because the non-clustered scenario would have some significant impacts that would not be mitigated to a less than significant level, if it decided to approve the project, the Board of Supervisors would be required to adopt a statement of overriding considerations under CEQA Section 20181(B) and *CEQA Guidelines* Section 15093 determining that the project's benefits outweigh its significant impacts on the environment.

Operation of the non-clustered scenario would have a less than significant impact related to air quality standards or violations, and no mitigation would be required.

Impact 3.2.3: Result in a cumulatively considerable increase of non-attainment criteria pollutants.

Significance Standard for Impact 3.2.3: Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Proposed Project

The proposed project would result in a direct significant air quality impact during construction after mitigation has been implemented. Construction-related emissions attributable to the project,

along with emissions from other reasonably foreseeable future projects in the Basin as a whole, would continue to contribute to increases in emissions that would exacerbate existing and projected nonattainment conditions. Thus, because the project's construction-period impact would not be mitigated to a level that is less than significant, the project would have a significant cumulative impact because it would result in a net increase in pollution that is cumulatively considerable.

The project would be consistent with SCAQMD's AQMP. Project operational emissions would be below SCAQMD's applicable thresholds of significance. Thus, the proposed project would not conflict with SCAQMD's air quality planning efforts for nonattainment pollutants and would not lead to a cumulatively considerable net increase in nonattainment pollutants during operations.

Impact Determination: Construction of the proposed project would violate air quality standards related to NO_X and PM_{10}, resulting in a significant direct and cumulative air quality impact. Implementation of Mitigation Measures MM 3.2-1 through MM 3.2-3 would reduce construction emissions of NO_X and PM_{10}; however, impacts would remain significant after mitigation is implemented (see Table 3.2-5). Because the proposed project would have some significant impacts that would not be mitigated to a less than significant level, if it decided to approve the project, the Board of Supervisors would be required to adopt a statement of overriding considerations under CEQA Section 20181(B) and *CEQA Guidelines* Section 15093 determining that the project's benefits outweigh its significant impacts on the environment.

Operation of the proposed project would have a less than significant impact related to cumulative air quality impacts, and no mitigation would be necessary.

Non-Clustered Scenario

Similar to that described above for the proposed project, construction emissions for the non-clustered scenario would lead to a cumulatively considerable net increase in nonattainment pollutants that would be significant even after mitigation has been implemented (see Table 3.2-8).

The non-clustered scenario would be consistent with SCAQMD's AQMP. Additionally, operational emissions would be below SCAQMD's applicable thresholds of significance. Thus, the non-clustered scenario would not conflict with SCAQMD's air quality planning efforts for nonattainment pollutants and would not lead to a cumulatively considerable net increase in nonattainment pollutants during operations.

Impact Determination: Construction of the non-clustered scenario would violate air quality standards related to NO_X and PM_{10}, resulting in a significant direct and cumulative air quality impact. Implementation of Mitigation Measures MM 3.2-1 through MM 3.2-3 would reduce construction emissions of NO_X and PM_{10}; however, impacts would remain significant after mitigation has been implemented. Because the non-clustered scenario would have some significant impacts that would not be mitigated to a less than significant level, if it decided to approve the project, the Board of Supervisors would be required to adopt a statement of overriding considerations under CEQA Section 20181(B) and *CEQA Guidelines* Section 15093 determining that the project's benefits outweigh its significant impacts on the environment.

Operation of the proposed project would have a less than significant impact related to cumulative air quality impacts, and no mitigation would be necessary.

Impact 3.2.4: Exposure of sensitive receptors to substantial pollutant concentrations.

Significance Standard for Impact 3.2.4: Would the project expose sensitive receptors to substantial pollutant concentrations?

Proposed Project

Separate discussions are provided below analyzing the potential for sensitive receptors to be exposed to CO hotspots, localized air quality impacts from criteria pollutants and TACs from on-site sources during project construction, and the potential for exposure to TACs from operational sources.

CO Hotspots

CO concentration is a direct function of motor vehicle activity (e.g., idling time and traffic flow conditions), particularly during peak commute hours and certain meteorological conditions. Under specific meteorological conditions (e.g., stable conditions that result in poor dispersion), CO concentrations may reach unhealthy levels with respect to local sensitive land uses such as residential areas, schools, and hospitals. As a result, SCAQMD recommends analysis of CO emissions at a local and regional level.

An appropriate qualitative screening procedure is provided in the procedures and guidelines contained in *Transportation Project-Level Carbon Monoxide Protocol* (the Protocol) to determine whether a project poses the potential for a CO hotspot (UCD ITS, 1997). This is the protocol recommended by Caltrans for project-level air quality analysis needed for federal conformity determinations. The Protocol is the standard method for project-level CO analysis used by Caltrans. A CO hotspot is an area of localized CO pollution that is caused by severe vehicle congestion on major roadways, typically near intersections. According to the Protocol, projects may worsen air quality if they increase the percentage of vehicles in cold start modes by two percent or more; significantly increase traffic volumes (by five percent or more) over existing volumes; or worsen traffic flow, defined for signalized intersections as increasing average delay at intersections operating at level of service (LOS) E or F or causing an intersection that would operate at LOS D or better without the project, to operate at LOS E or F.

The proposed project's traffic analysis (RK Engineering Group, Inc., 2011; see Appendix K) indicates that some of the signalized intersections that were analyzed would operate at LOS E or LOS F under 2035 cumulative conditions.

As discussed above, the CALINE4 model was used to predict future CO concentrations at the study intersection analyzed in the traffic report for the proposed project that would experience the highest traffic volumes during both the interim (2015) and buildout (2035) years in order to provide a worst-case analysis of future conditions. Based on the traffic study, the intersection of Portola Parkway/Santa Margarita Parkway and El Toro Road would experience the highest traffic

volumes during the PM hour for both the interim and buildout years. As such, the localized CO concentration at this intersection was calculated and evaluated in this analysis.

After determining the 1-hour CO concentrations at the intersection of Portola Parkway/Santa Margarita Parkway and El Toro Road for the interim (2015) and buildout (2035) years, the 8-hour CO concentrations for these two years were derived from the respective 1-hour concentrations using a generalized persistence factor for an urban location recommended in the Caltrans Protocol. The persistence factor is the ratio between the 8-hour and 1-hour CO concentration.

The maximum 1-hour and 8-hour CO concentrations determined at the intersection for the interim (2015) and buildout (2035) scenarios were then added to their respective future 1-hour and 8-hour CO background concentrations provided by SCAQMD from its El Toro monitoring site location, which is nearest to the project site. Since the future 1-hour and 8-hour CO background concentrations are only provided up to year 2020 by SCAQMD, the CO background concentration for that year was used to estimate the 1-hour and 8-hour CO concentration at the intersection for year 2035. Given that levels of CO from vehicles are expected to gradually decline with time due to the retirement of older polluting vehicles, less CO emissions from new vehicles, and improvements in fuels, the future CO concentrations in 2035 are expected to be lower than those in 2020. As such, the use of the 2020 1-hour and 8-hour CO background concentration for analysis of the project's buildout (2035) scenario would provide a conservative analysis. **Table 3.2-10** summarizes the maximum 1-hour and 8-hour CO concentrations at this intersection.

TABLE 3.2-10
FUTURE LOCALIZED CARBON MONOXIDE CONCENTRATIONS

	CO Concentrations in Parts per Million [a]	
Intersection	**Maximum 1-Hour[b]**	**Maximum 8-Hour[b]**
Portola Parkway/Santa Margarita Parkway and El Toro Road (2015)	3.9	2.5
Portola Parkway/Santa Margarita Parkway and El Toro Road (2035)	3.4	2.2

[a] The national 1-hour CO ambient air quality standard is 35.0 ppm, and the state 1-hour CO ambient air quality standard is 20.0 ppm. National and state 8-hour standards are 9.0 parts per million.
[b] The maximum concentrations are located approximately 3 meters from the corners of the study intersection.

TRAFFIC INFORMATION SOURCE: RK Engineering Group, Inc., 2012.

SOURCE: ESA, 2012.

As shown in Table 3.2-10, the maximum 1-hour and 8-hour CO concentrations at this intersection would not exceed their respective national or state ambient air quality standards (i.e., the national 1-hour CO ambient air quality standard is 35.0 ppm, and the state 1-hour CO ambient air quality standard is 20.0 ppm; the 8-hour national and state standards for localized CO concentrations are 9.0 ppm). In addition, as all of the remaining study intersections analyzed would have lower

traffic volumes than this intersection, the localized CO concentrations at those intersections would also not exceed the respective national or state ambient air quality standards.

Localized Construction Air Quality Impacts – Criteria Air Pollutants

In accordance with SCAQMD's methodology for analyzing localized air quality impacts, air quality dispersion modeling was performed for the proposed project to determine whether construction activities at the project site would cause or contribute to adverse localized air quality impacts on nearby off-site sensitive receptors. As discussed previously, the criteria pollutants that are required to be analyzed include NO_X (in the form of NO_2), CO, PM_{10}, and $PM_{2.5}$.

As the worst-case daily construction emissions for the proposed project would occur during the overlap of the land clearing and grading phases at the project site, these emissions were used in the dispersion model to estimate the localized air quality impacts at the nearest sensitive receptors located around the project site. **Table 3.2-11** summarizes the resulting pollutant concentrations at the nearby off-site receptors during the worst-case construction day at the project site. **Figure 3.2-1**, shows the location of the nearby off-site receptors.

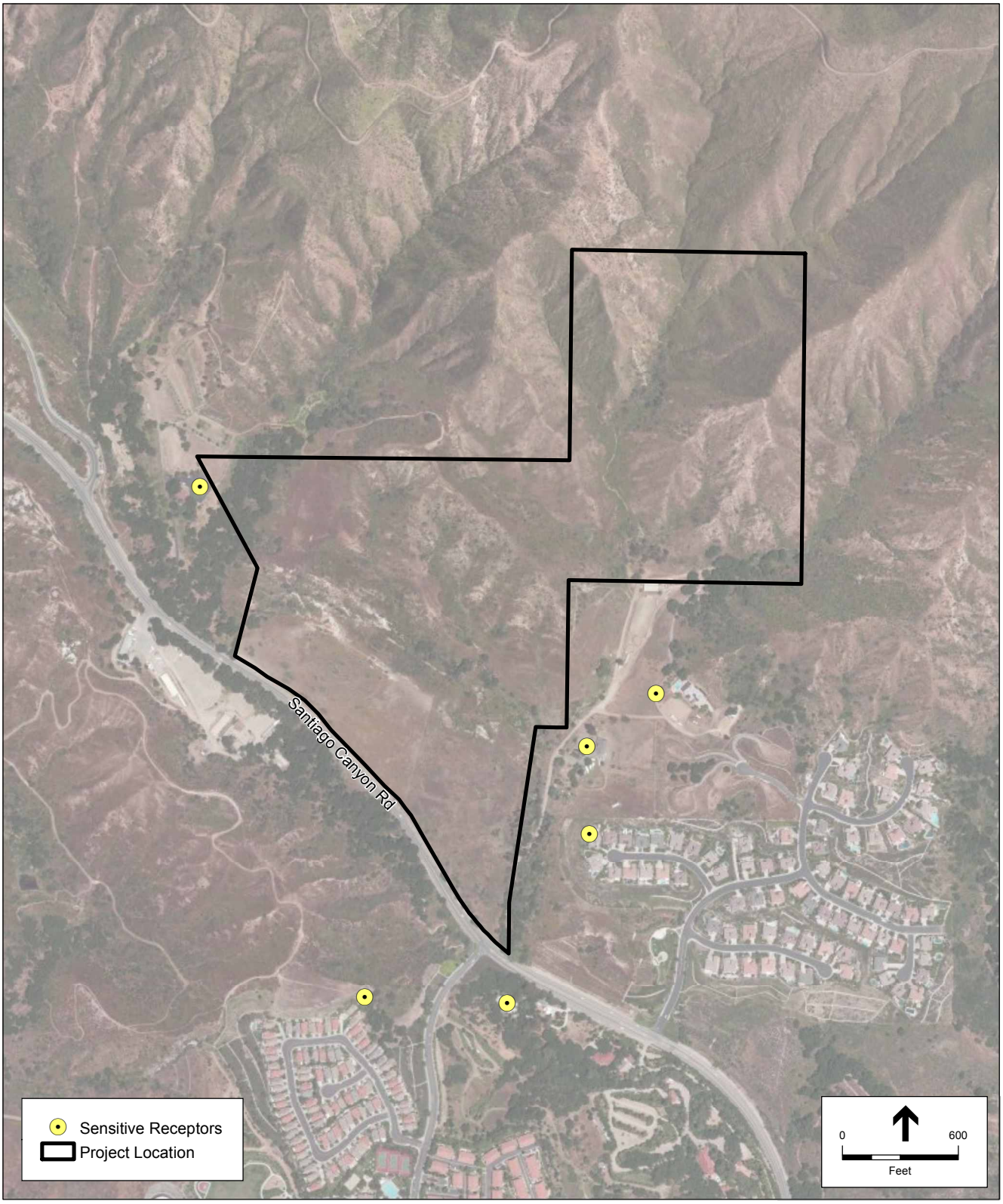
TABLE 3.2-11
ESTIMATED MAXIMUM DAILY CONSTRUCTION POLLUTANT CONCENTRATIONS AT OFF-SITE RECEPTORS – PROPOSED PROJECT

Sensitive Receptor Locations	Pollutant Concentrations				
	1-Hour NO_2 (ppm) [a,b]	1-Hour CO (ppm)[b]	8-Hour CO (ppm)[b]	24-Hour PM_{10} ($\mu g/m^3$)	24-Hour $PM_{2.5}$ ($\mu g/m^3$)
1) Residence located southeast of project site and northeast of Wood Canyon Road.	0.077	2.09	0.92	2.59	1.04
2) Residence located southeast of project site boundary.	0.076	2.09	0.93	4.82	1.82
3) Nearest residence from Santiago Canyon Estates residential community.	0.076	2.08	0.92	3.40	1.33
4) Residence located south of the project site, adjacent Santiago Canyon Road.	0.076	2.07	0.91	2.07	0.76
5) Nearest residence from Portola Hills residential community.	0.080	2.10	0.91	1.05	0.51
6) Residence located west of the project site, off of Country Home Road.	0.078	2.12	0.92	2.80	1.09

[a] The NO_2 concentrations from the construction activities take into account the gradual conversion of NO_X emissions to NO_2 emissions. As discussed previously, the analysis of localized air quality impacts associated with NO_X emissions is focused on NO_2 levels as they are associated with adverse health effects.

[b] The concentrations take into account the existing background concentrations for each respective pollutant. With respect to NO_2 levels, the Mission Viejo monitoring station currently does not measure this pollutant. As such, the NO_2 background level from the Costa Mesa monitoring station was used.

SOURCE: ESA, 2012.



SOURCE: Bing Maps; ESA, 2012.

Saddle Crest Homes . 211454

Figure 3.2-1

Nearest Off-Site Receptor Locations

Table 3.2-12 summarizes the annual pollutant concentrations at the nearest off-site receptors resulting from the worst-case construction emissions generated at the project site by the proposed project, which would occur in 2013.

TABLE 3.2-12
ESTIMATED MAXIMUM ANNUAL CONSTRUCTION POLLUTANT CONCENTRATIONS AT OFF-SITE RECEPTORS – PROPOSED PROJECT

	Pollutant Concentrations	
Sensitive Receptor Locations	**Annual NO_2 (ppm)[a]**	**Annual PM_{10} (µg/m^3)**
1. Residence located southeast of project site and northeast of Wood Canyon Road.	0.0001	0.39
2. Residence located southeast of project site boundary.	0.0003	0.74
3. Nearest residence from Santiago Canyon Estates residential community.	0.0002	0.48
4. Residence located south of the project site, adjacent Santiago Canyon Road.	0.00006	0.13
5. Nearest residence from Portola Hills residential community.	0.0001	0.07
6. Residence located west of the project site, off of Country Home Road.	0.0001	0.21

[a] The NO_2 concentrations from the construction activities take into account the gradual conversion of NO_X emissions to NO_2 emissions. As discussed previously, the analysis of localized air quality impacts associated with NO_X emissions is focused on NO_2 levels as they are associated with adverse health effects.

SOURCE: ESA, 2012.

As shown in Tables 3.2-11 and 3.2-12, none of the pollutants would exceed the applicable thresholds recommended by SCAQMD for construction-related pollutant concentrations at the nearby sensitive receptors. Thus, localized air quality impacts associated with construction at the off-site sensitive receptors would be less than significant.

Localized Construction Air Quality Impacts – Toxic Air Contaminants

Project construction would result in short-term emissions of diesel PM, a TAC. The exhaust of off-road heavy-duty diesel equipment would emit diesel PM during site preparation (e.g., excavation, grading, and clearing); paving; installation of utilities, materials transport and handling; building construction; and other miscellaneous activities. SCAQMD has not adopted a methodology for analyzing such impacts and has not recommended that health risk assessments be completed for construction-related emissions of TACs.

The dose to which receptors are exposed is the primary factor used to determine health risk (i.e., the potential exposure to TACs to be compared to applicable standards). Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the maximally exposed individual. Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer period of time. According to the Office of Environmental Health Hazard Assessment, health risk

assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on a 70-year exposure period; however, such assessments should be limited to the period or duration of activities associated with the proposed project.

The construction period for the proposed project would be much less than the 70-year period used for risk determination, and the equipment would often be located at a considerable distance from the nearest sensitive receptors. Because off-road heavy-duty diesel equipment would be used only temporarily, and because the highly dispersive properties of diesel PM (Zhu et al., 2002) would result in further reductions in exhaust emissions, project construction would not expose sensitive receptors to substantial emissions of TACs.

Operations

The proposed project would not introduce any new stationary sources of TACs, such as diesel-fueled backup generators. Therefore, the project would not expose surrounding sensitive receptors to TAC emissions.

ARB's Handbook includes the recommendation to avoid the siting of new sensitive land uses (e.g., residences, schools) within 500 feet of freeways, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day. The projected 2035 average daily trips (ADT) volume on roadways in the proposed project area is less than ARB's specified criteria. The buildout year (2035) daily traffic volume with the project on Santiago Canyon Road is 12,000 ADT and on El Toro Road is 20,000 ADT. Therefore, the location of the proposed sensitive uses would be in concurrence with ARB recommendations. Based on the criteria in the ARB guidance document, it can be ascertained that the proposed project would not have the potential to expose sensitive receptors to TACs from mobile sources to an extent that health risks could result.

Impact Determination: The proposed project would not result in exposure of sensitive receptors to substantial concentrations of criteria air pollutants and toxic air contaminants. Implementation of Mitigation Measures MM 3.2-1 through MM 3.2-3 would further reduce exposure to criteria air pollutants; impacts would be less than significant.

Non-Clustered Scenario

An analysis of the potential for sensitive receptors to be exposed to CO hotspots, localized air quality impacts from criteria pollutants and TACs from on-site sources during construction, and the potential for exposure to TACs from operational sources associated with the non-clustered scenario is provided below.

CO Hotspots

Similar to the proposed project, the non-clustered scenario would also introduce 65 new single-family homes at the project site. As such, the traffic volumes generated under the non-clustered scenario would be the same as the proposed project. Given the same traffic volumes, the impact associated with CO hotspots would also be the same. As discussed previously for the proposed project and shown in Table 3.2-10, the maximum 1-hour and 8-hour CO concentrations at the study intersection of Portola Parkway/Santa Margarita Parkway and El Toro Road, which would experience the highest peak-hour traffic volumes, would not exceed their respective national or

State ambient air quality standards. In addition, as all of the remaining study intersections analyzed would have lower traffic volumes than this intersection, the localized CO concentrations at those intersections would also not exceed the respective national or state ambient air quality standards. Thus, this impact would be less than significant.

Localized Construction Air Quality Impacts

The worst-case daily construction emissions for the non-clustered scenario would occur during the overlap of the land clearing and grading phases at the project site. These emissions were used in the AERMOD dispersion model to estimate the localized air quality impacts at the nearest sensitive receptors located around the project site. **Table 3.2-13** summarizes the resulting pollutant concentrations at the nearby off-site receptors during the worst-case construction day at the project site.

TABLE 3.2-13
ESTIMATED MAXIMUM DAILY CONSTRUCTION POLLUTANT CONCENTRATIONS AT OFF-SITE RECEPTORS – NON-CLUSTERED SCENARIO

	Pollutant Concentrations				
Sensitive Receptor Locations	**1-Hour NO_2 (ppm) [a,b]**	**1-Hour CO (ppm)[b]**	**8-Hour CO (ppm)[b]**	**24-Hour PM_{10} ($\mu g/m^3$)**	**24-Hour $PM_{2.5}$ ($\mu g/m^3$)**
1) Residence located southeast of project site and northeast of Wood Canyon Road.	0.083	2.16	0.92	2.27	1.48
2) Residence located southeast of project site boundary.	0.078	2.12	0.93	3.22	1.68
3) Nearest residence from Santiago Canyon Estates residential community.	0.077	2.09	0.92	2.40	1.30
4) Residence located south of the project site, adjacent Santiago Canyon Road.	0.077	2.08	0.91	1.72	0.92
5) Nearest residence from Portola Hills residential community.	0.105	2.24	0.93	1.55	1.17
6) Residence located west of the project site, off of Country Home Road.	0.081	2.15	0.92	2.16	1.29

[a] The NO_2 concentrations from the construction activities take into account the gradual conversion of NO_X emissions to NO_2 emissions. As discussed previously, the analysis of localized air quality impacts associated with NO_X emissions is focused on NO_2 levels as they are associated with adverse health effects.

[b] The concentrations take into account the existing background concentrations for each respective pollutant. With respect to NO_2 levels, the Mission Viejo monitoring station currently does not measure this pollutant. As such, the NO_2 background level from the Costa Mesa monitoring station was used.

SOURCE: ESA, 2012.

Table 3.2-14 summarizes the annual pollutant concentrations at the nearest off-site receptors resulting from the worst-case construction emissions generated at the project site by the non-clustered scenario, which would occur in 2013. The location of the off-site receptors is shown in Figure 3.2-1.

TABLE 3.2-14
ESTIMATED MAXIMUM ANNUAL CONSTRUCTION POLLUTANT CONCENTRATIONS AT OFF-SITE RECEPTORS – NON-CLUSTERED SCENARIO

	Pollutant Concentrations	
Sensitive Receptor Locations	**Annual NO_2 (ppm)[a]**	**Annual PM_{10} (µg/m^3)**
1) Residence located southeast of project site and northeast of Wood Canyon Road.	0.0003	0.46
2) Residence located southeast of project site boundary.	0.0003	0.66
3) Nearest residence from Santiago Canyon Estates residential community.	0.0003	0.41
4) Residence located south of the project site, adjacent Santiago Canyon Road.	0.00006	0.14
5) Nearest residence from Portola Hills residential community.	0.0001	0.09
6) Residence located west of the project site, off of Country Home Road.	0.0001	0.23

[a] The NO_2 concentrations from the construction activities take into account the gradual conversion of NO_X emissions to NO_2 emissions. As discussed previously, the analysis of localized air quality impacts associated with NO_X emissions is focused on NO_2 levels as they are associated with adverse health effects.

SOURCE: ESA, 2012.

As shown in Tables 3.2-13 and 3.2-14, none of the pollutants would exceed the applicable thresholds recommended by SCAQMD for construction-related pollutant concentrations at the nearby sensitive receptors.

Localized Construction Air Quality Impacts – Toxic Air Contaminants

Similar to the proposed project, construction under the non-clustered scenario would result in short-term emissions of TACs such as diesel PM. However, the construction period for the non-clustered scenario would be much less than the 70-year period used for risk determination by OEHHA and the equipment would often be located at a considerable distance from the nearest sensitive receptors. As off-road heavy-duty diesel equipment would only be used temporarily during construction and given that the highly dispersive properties of diesel PM would result in further reductions in exposure concentrations, construction activities under the non-clustered scenario would not expose sensitive receptors to substantial emissions of TACs. This impact would be less than significant.

Operations

Similar to the proposed project, the non-clustered scenario would not introduce any new stationary sources of TACs, such as diesel-fueled backup generators. Therefore, the surrounding sensitive receptors would not be exposed to TAC emissions during operations at the project site.

With respect to the exposure of the new residential uses at the project site under the non-clustered scenario to TACs from mobile sources on the nearby roadways, the impact would be the same as that of the proposed project as the traffic volumes generated under the non-clustered scenario would be the same as the proposed project. As discussed previously, ARB's Handbook includes the recommendation to avoid the siting of new sensitive land uses (e.g., residences, schools) within 500 feet of freeways, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day. As the projected 2035 average ADT volume on roadways in the project area would be less than ARB's specified criteria, the location of the proposed sensitive uses at the project site under the non-clustered scenario would be in concurrence with ARB recommendations. Based on the criteria in the ARB guidance document, it can be ascertained that the non-clustered scenario would not have the potential to expose sensitive receptors to TACs from mobile sources to an extent that health risks could result.

Impact Determination: The non-clustered scenario would not result in exposure of sensitive receptors to substantial concentrations of criteria air pollutants and toxic air contaminants. Implementation of Mitigation Measures MM 3.2-1 through MM 3.2-3 would further reduce exposure to criteria air pollutants; impacts would be less than significant.

3.2.6 Cumulative Impacts

Both the proposed project and the non-clustered scenario would result in significant air quality impacts associated with construction activities, even after the implementation of Mitigation Measures MM 3.2-1 through MM 3.2-3. The project site is located within the Basin, which is considered the cumulative study area for air quality. Construction-related emissions attributable to the proposed project or the non-clustered scenario, along with emissions from other past, present, or reasonably foreseeable future projects in the Basin as a whole, would continue to contribute to increases in emissions that would exacerbate existing and projected nonattainment conditions (see Impact 3.2.3). Thus, because the proposed project's and the non-clustered scenario's construction-period impact would not be mitigated to a level that is less than significant, the proposed project and the non-clustered scenario would result in a significant cumulative impact, when considered with other past, present and reasonably foreseeable projects.

Both the proposed project and the non-clustered scenario would be consistent with SCAQMD's AQMP. Project operational emissions associated with both the proposed project and the non-clustered scenario would be below SCAQMD's applicable thresholds of significance. Thus, neither the proposed project nor the non-clustered scenario would conflict with SCAQMD's air quality planning efforts for nonattainment pollutants and would not lead to a cumulatively considerable net increase in nonattainment pollutants during operations. However, as stated above, construction emissions could lead to a cumulatively considerable net increase in nonattainment pollutants.

Impact Determination: The proposed project and the non-clustered scenario would add new emissions to the cumulative geographic area. Construction emissions for both the proposed

project and the non-clustered scenario would result in a significant direct and cumulative impact to air quality. Mitigation Measures MM 3.2-1 through MM 3.2-3 would reduce the proposed project's and non-clustered scenario's contribution to cumulative emissions in the Basin. Neither the proposed project nor the non-clustered scenario would conflict with SCAQMD's air quality planning efforts for nonattainment pollutants. However, the proposed project's and non-clustered scenario's construction emissions with mitigation would still exceed SCAQMD's significance thresholds for NOx and PM_{10}. Thus, both the proposed project and the non-clustered scenario would contribute to a cumulative impact when considered with past, present and probable future projects.

3.2.7 Mitigation Measures

MM 3.2-1 The following measures are required to reduce emissions of fugitive dust, including PM_{10} during construction activities for the proposed project and the non-clustered scenario. Prior to the issuance of any preliminary grading permit, the applicant shall provide evidence to the Manager, Permit Services that the following measures are compliant with SCAQMD Rule 403 for best available control measures.

- Haul trucks shall be covered when loaded with fill (applicable only to non-clustered scenario).
- Paved streets shall be swept at least once per day where there is evidence of dirt that has been carried on to the roadway.
- Watering trucks shall be used to minimize dust. Watering should be sufficient to confine dust plumes to the project work areas.
- Active disturbed areas shall have water applied to them three times daily.
- Inactive disturbed areas shall be revegetated as soon as feasible to prevent soil erosion.
- For disturbed surfaces to be left inactive for four or more days and that will not be revegetated, a chemical stabilizer shall be applied per manufacturer's instruction.
- For unpaved roads, chemical stabilizers shall be applied or the roads shall be watered once per hour during active operation.
- Vehicle speed on unpaved roads shall be limited to 15 miles per hour.
- For open storage piles that will remain on-site for two or more days, water shall be applied once per hour, or coverings shall be installed.
- For paved road track-out, all haul vehicles shall be covered, or shall comply with vehicle freeboard requirements of Section 23114 of the California Vehicle Code for both public and private roads.
- During high wind conditions (wind speeds in excess of 25 miles per hour), all earthmoving activities shall cease or water shall be applied to soil not more than 15 minutes prior to disturbing such soil.

MM 3.2-2 The following mitigation measure shall be incorporated to minimize emissions of NO_X associated with construction activities for the proposed project and the non-clustered scenario:

- All construction equipment used on-site and for on-road export of soil shall meet USEPA Tier II or Tier III certification requirements.

MM 3.2-3 The project shall comply with all applicable SCAQMD regulations, i.e. Rule 401 – Visible Emissions, Rule 402 – Nuisance, and Rule 1113 – Architectural Coatings to minimize criteria air pollutant emissions (NO_X and PM_{10}).

3.2.8 Impact Determination

The proposed project and the non-clustered scenario would have the same impact determinations for air quality. Regarding Impact 3.2.1, there would be less than significant impacts related to a conflict of obstruction of implementation of the AQMP for the Basin. The proposed project and non-clustered scenario would not conflict with the AQMP or SCAQMD's attainment plans, and impacts would be less than significant and no mitigation would be necessary.

Construction of the proposed project and non-clustered scenario would violate air quality standards related to NO_X and PM_{10}, resulting in a significant air quality impact (Impact 3.2.2). Implementation of Mitigation Measures MM 3.2-1 through MM 3.2-3 would reduce construction emissions of NO_X and PM_{10}; however, impacts after mitigation would remain significant and unavoidable. Construction emissions after incorporation of mitigation for the proposed project and the non-clustered scenario are shown in Table 3.2-5 and Table 3.2-8, respectively. Operation of the proposed project and the non-clustered scenario would have a less than significant impact related to air quality standards or violations, and no mitigation would be necessary.

Mitigation Measure MM 3.2-1 would reduce the construction $PM_{2.5}$ emissions for the proposed project to below the SCAQMD threshold of significance. Although the $PM_{2.5}$ emissions for the non-clustered scenario during construction would be below the SCAQMD threshold of significance prior to mitigation, implementation of Mitigation Measure MM 3.2-1 would further reduce these emissions. However, compliance with SCAQMD rules and regulations and incorporation of all feasible mitigation measures would not reduce NO_X and PM_{10} emissions associated with the proposed project and non-clustered scenario to below a level of significance. Mitigation Measure MM 3.2-1 represents best available control measures for minimizing dust impacts. Emissions data shown in Tables 3.2-5 and 3.2-8 includes the impact of these measures. The proposed project's and non-clustered scenario's PM_{10} emissions would exceed SCAQMD's significance threshold with inclusion of all feasible measures. Similarly use of Tier II and Tier III certified equipment would reduce NO_X emissions to the extent feasible. USEPA-certified Tier IV equipment is not readily available for all construction equipment categories at the time of writing. Therefore, incorporation of Tier II and III equipment represents the most feasible and effective mitigation for NO_X emissions. However, given the large magnitude of the proposed project's and non-clustered scenario's maximum daily emissions, these measures would not reduce NO_X emissions to below a level of significance. Overall, the NO_X and PM_{10} emissions resulting from

grading and construction activities would exceed the adopted SCAQMD significance thresholds and would remain significant even with the implementation of mitigation measures. Impacts to sensitive receptors from criteria air pollutants and TACs during construction and operation of the proposed project and the non-clustered scenario would be less than significant (Impact 3.2.4).