5.2 AIR QUALITY

This Section of the DSEIR compares the air quality impacts of the Proposed Project to the air quality impacts of the 2011 Approved Project.

Air quality modeling for the Proposed Project is included as Appendix C to this DSEIR.

5.2.1 Environmental Setting

South Coast Air Basin

The Project Site lies within the South Coast Air Basin ("SoCAB"), which includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. The SoCAB is in a coastal plain with connecting broad valleys and low hills and is bounded by the Pacific Ocean in the southwest quadrant, with high mountains forming the remainder of the perimeter. The general region lies in the semi-permanent high-pressure zone of the eastern Pacific. As a result, the climate is mild, tempered by cool sea breezes. This usually mild weather pattern is interrupted infrequently by periods of extremely hot weather, winter storms, and Santa Ana winds.

Temperature and Precipitation

The annual average temperature varies little throughout the SoCAB, ranging from the low to middle 60s, measured in degrees Fahrenheit (°F). With a more pronounced oceanic influence, coastal areas show less variability in annual minimum and maximum temperatures than inland areas. The climatological station nearest to the Proposed Project Site is the Tustin Irvine Ranch Station Monitoring Station (ID 049087). The average low is reported at 49.4°F in January while the average high is 75.4°F in August (WRCC 2011).

In contrast to a very steady pattern of temperature, rainfall is seasonally and annually highly variable. Almost all rain falls from November through April. Summer rainfall is normally restricted to widely scattered thundershowers near the coast, with slightly heavier shower activity in the east and over the mountains. Rainfall averages around 12.86 inches per year in the area of the Proposed Project Site, as measured in Irvine (WRCC 2011).

Humidity

Although the SoCAB has a semi-arid climate, the air near the surface is typically moist because of the presence of a shallow marine layer. Except for infrequent periods when dry, continental air is brought into the SoCAB by offshore winds, the ocean effect is dominant. Periods of heavy fog, especially along the coastline, are frequent; low stratus clouds, often referred to as high fog, are a characteristic climatic feature. Annual average humidity is 70 percent at the coast and 57 percent in the eastern portions of the SoCAB.

Wind

Wind patterns across the south coastal region are characterized by westerly and southwesterly onshore winds during the day and easterly or northeasterly breezes at night. Wind speed is somewhat greater during the dry summer months than during the rainy winter season.

Between periods of wind, periods of air stagnation may occur, both in the morning and evening hours. Air stagnation is one of the critical determinants of air quality conditions on any given day. During the winter and fall months, surface high-pressure systems over the SoCAB, combined with other meteorological conditions, can result in very strong, downslope Santa Ana winds. These winds normally continue a few days before predominant meteorological conditions are re-established.

The mountain ranges to the east of the SoCAB affect the transport and diffusion of pollutants by inhibiting the eastward transport of pollutants. Air quality in the SoCAB generally ranges from fair to poor and is similar to air quality in most of coastal southern California. The entire region experiences heavy concentrations of air pollutants during prolonged periods of stable atmospheric conditions.

Inversions

In conjunction with the two characteristic wind patterns that affect the rate and orientation of horizontal pollutant transport, there are two similarly distinct types of temperature inversions that control the vertical depth through which pollutants are mixed. These inversions are the marine/subsidence inversion and the radiation inversion. The height of the base of the inversion at any given time is known as the "mixing height." The combination of winds and inversions are critical determinants in leading to the highly degraded air quality in summer and the generally good air quality in the winter in the vicinity of Proposed Project Site.

Air Pollutants of Concern

Criteria Air Pollutants

The air pollutants emitted into the ambient air by stationary and mobile sources are regulated by federal and state law. Air pollutants are categorized as primary or secondary pollutants. Primary air pollutants are those that are emitted directly from sources. Carbon monoxide (CO), volatile organic compounds (VOC), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), coarse inhalable particulate matter (PM_{10}), fine inhalable particulate matter ($PM_{2.5}$), and lead (Pb) are primary air pollutants. Of these, CO, SO_2, NO_2, PM_{10}, and $PM_{2.5}$ are "criteria air pollutants," which means that ambient air quality standards (AAQS) have been established for them. VOC and oxides of nitrogen (NO_x) are air pollutant precursors that form secondary criteria pollutants through chemical and photochemical reactions in the atmosphere. Ozone (O_3) and NO_2 are the principal secondary pollutants. A description of each of the primary and secondary criteria air pollutants and their known health effects is presented below.

Carbon Monoxide (CO) is a colorless, odorless, toxic gas produced by incomplete combustion of carbon substances, such as gasoline or diesel fuel. CO is a primary criteria air pollutant. CO concentrations tend to be the highest during winter mornings with little to no wind, when surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion, engines and motor vehicles operating at slow speeds are the primary source of CO in the SoCAB. The highest ambient CO concentrations are generally found near traffic-congested corridors and intersections. The primary adverse health effect associated with CO is interference with normal oxygen transfer to the blood, which may result in tissue oxygen deprivation (SCAQMD 2005). The SoCAB is designated under the California and National AAQS as being in attainment of CO criteria levels (CARB 2013).

Volatile Organic Compounds (VOC) are compounds composed primarily of atoms of hydrogen and carbon. Internal combustion associated with motor vehicle usage is the major source of hydrocarbons.

Other sources of VOCs include evaporative emissions associated with the use of paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. There are no ambient air quality standards established for VOCs. However, because they contribute to the formation of ozone (O_3), SCAQMD has established a significance threshold for this pollutant (SCAQMD 2005).

Nitrogen Oxides (NO_x) are a byproduct of fuel combustion and contribute to the formation of O_3, PM_{10}, and $PM_{2.5}$. The two major forms of NO_x are nitric oxide (NO) and nitrogen dioxide (NO_2). The principal form of NO_2 produced by combustion is NO, but NO reacts with oxygen to form NO_2, creating the mixture of NO and NO_2 commonly called NO_x. NO_2 acts as an acute irritant and, in equal concentrations, is more injurious than NO. At atmospheric concentrations, however, NO_2 is only potentially irritating. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis. Some increase in bronchitis in children (two and three years old) has also been observed at concentrations below 0.3 part per million (ppm). NO_2 absorbs blue light; the result is a brownish-red cast to the atmosphere and reduced visibility. NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure (SCAQMD 2005). The SoCAB is designated as an attainment area for NO_2 under the National AAQS and nonattainment under the California AAQS (CARB 2013).

Sulfur Dioxide (SO_2) is a colorless, pungent, irritating gas formed by the combustion of sulfurous fossil fuels. It enters the atmosphere as a result of burning high-sulfur-content fuel oils and coal and from chemical processes at chemical plants and refineries. Gasoline and natural gas have very low sulfur content and do not release significant quantities of SO_2 (SCAQMD 2005). When sulfur dioxide forms sulfates (SO4) in the atmosphere, together these pollutants are referred to as sulfur oxides (SOx). Thus, SO2 is both a primary and secondary criteria air pollutant. At sufficiently high concentrations, SO2 may irritate the upper respiratory tract. At lower concentrations and when combined with particulates, SO2 may do greater harm by injuring lung tissue. The SoCAB is designated as attainment under the California and National AAQS (CARB 2013).

Suspended Particulate Matter (PM_{10} and $PM_{2.5}$) consists of finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. Two forms of fine particulates are now recognized and regulated. Inhalable coarse particles, or PM10, include the particulate matter with an aerodynamic diameter of 10 microns (i.e., 10 millionths of a meter or 0.0004 inch) or less. Inhalable fine particles, or $PM_{2.5}$, have an aerodynamic diameter of 2.5 microns (i.e., 2.5 millionths of a meter or 0.0001 inch) or less. Particulate discharge into the atmosphere results primarily from industrial, agricultural, construction, and transportation activities. However, wind action on arid landscapes also contributes substantially to local particulate loading (i.e., fugitive dust). Both PM_{10} and $PM_{2.5}$ may adversely affect the human respiratory system, especially in people who are naturally sensitive or susceptible to breathing problems (SCAQMD 2005).

The US Environmental Protection Agency's (EPA) scientific review concluded that $PM_{2.5}$, which penetrates deeply into the lungs, is more likely than PM_{10} to contribute to health effects and at concentrations that extend well below those allowed by the current PM_{10} standards. These health effects include premature death and increased hospital admissions and emergency room visits (primarily the elderly and individuals with cardiopulmonary disease); increased respiratory symptoms and disease (children and individuals with cardiopulmonary disease such as asthma); decreased lung functions (particularly in children and individuals with asthma); and alterations in lung tissue and structure and in respiratory tract defense mechanisms. Diesel particulate matter (DPM) is classified by the California Air

Resources Board (CARB) as a carcinogen. The SoCAB is a nonattainment area for $PM_{2.5}$ and PM_{10} under California and National AAQS (CARB 2013).

Ozone (O_3) is commonly referred to as "smog" and is a gas that is formed when VOCs and NO_x, both by-products of internal combustion engine exhaust, undergo photochemical reactions in the presence of sunlight. O_3 is a secondary criteria air pollutant. O_3 concentrations are generally highest during the summer months when direct sunlight, light winds, and warm temperatures create favorable conditions for the formation of this pollutant. O_3 poses a health threat to those who already suffer from respiratory diseases as well as to healthy people. Additionally, O_3 has been tied to crop damage, typically in the form of stunted growth and premature death. O_3 can also act as a corrosive, resulting in property damage such as the degradation of rubber products (SCAQMD 2005). The SoCAB is designated as extreme nonattainment under the California AAQS (1-hour and 8-hour) and National AAQS (8-hour) (CARB 2011).[1]

Lead (Pb) concentrations decades ago exceeded the state and federal AAQS by a wide margin, but have not exceeded state or federal air quality standards at any regular monitoring station since 1982 (SCAQMD 2005). However, in 2008 the EPA and CARB adopted more strict lead standards, and special monitoring sites immediately downwind of lead sources[2] recorded very localized violations of the new state and federal standards. As a result of these localized violations, the Los Angeles County portion of the SoCAB was designated in 2010 as nonattainment under the California and National AAQS for lead (CARB 2011). The project is not characteristic of industrial-type projects that have the potential to emit lead. Therefore, lead is not a pollutant of concern for the project.

Toxic Air Contaminants

The public's exposure to air pollutants classified as toxic air contaminants (TACs) is a significant environmental health issue in California. In 1983, the California Legislature enacted a program to identify the health effects of TACs and to reduce exposure to these contaminants to protect the public health. The California Health and Safety Code defines a TAC as "an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health." A substance that is listed as a hazardous air pollutant (HAP) pursuant to Section 112(b) of the federal Clean Air Act (42 United States Code §7412[b]) is a toxic air contaminant. Under state law, the California Environmental Protection Agency (Cal/EPA), acting through CARB, is authorized to identify a substance as a TAC if it determines that the substance is an air pollutant that may cause or contribute to an increase in mortality or to an increase in serious illness, or may pose a present or potential hazard to human health.

California regulates TACs primarily through Assembly Bill (AB) 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics "Hot Spot" Information and Assessment Act of 1987). The Tanner Air Toxics Act sets forth a formal procedure for CARB to designate substances as TACs. Once a TAC is identified, CARB adopts an "airborne toxics control measure" for sources that emit designated TACs. If there is a safe threshold for a substance (i.e., a point below which there is no toxic effect), the control measure must

[1] CARB approved the SCAQMD's request to redesignate the SoCAB from serious nonattainment for PM_{10} to attainment for PM_{10} under the National AAQS on March 25, 2010, because the SoCAB has not violated federal 24-hour PM_{10} standards during the period from 2004 to 2007. However, the EPA has not yet approved this request.

[2] Source-oriented monitors record concentrations of lead at lead-related industrial facilities in the SoCAB, which include Exide Technologies in the City of Commerce; Quemetco, Inc., in the City of Industry; Trojan Battery Company in Santa Fe Springs; and Exide Technologies in Vernon. Monitoring conducted between 2004 through 2007 identified that the Trojan Battery Company and Exide Technologies exceed the federal standards (SCAQMD 2010).

reduce exposure to below that threshold. If there is no safe threshold, the measure must incorporate toxics best available control technology to minimize emissions. To date, CARB has established formal control measures for 11 TACs, all of which are identified as having no safe threshold.

Air toxics from stationary sources are also regulated in California under the Air Toxics "Hot Spot" Information and Assessment Act of 1987. Under AB 2588, toxic air contaminant emissions from individual facilities are quantified and prioritized by the air quality management district or air pollution control district. High priority facilities are required to perform a health risk assessment and, if specific thresholds are exceeded, are required to communicate the results to the public in the form of notices and public meetings.

By the last update to the TAC list in December 1999, CARB had designated 244 compounds as TACs (CARB 1999). Additionally, CARB has implemented control measures for a number of compounds that pose high risks and show potential for effective control. The majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most important being particulate matter from diesel-fueled engines.

In 1998, CARB identified particulate emissions from diesel-fueled engines (diesel PM) as a TAC. Previously, the individual chemical compounds in diesel exhaust were considered TACs. Almost all diesel exhaust particle mass is 10 microns or less in diameter. Because of their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lung.

In 2000, SCAQMD conducted a study on ambient concentrations of TACs and estimated the potential health risks from air toxics. The results showed that the overall risk for excess cancer from a lifetime exposure to ambient levels of air toxics was about 1,400 in a million. The largest contributor to this risk was diesel exhaust, accounting for 71 percent of the air toxics risk. In 2008, SCAQMD conducted its third update to its study on ambient concentrations of TACs and estimated the potential health risks from air toxics. The results showed that the overall risk for excess cancer from a lifetime exposure to ambient levels of air toxics was about 1,200 in one million. The largest contributor to this risk was diesel exhaust, accounting for approximately 84 percent of the air toxics risk (SCAQMD 2008).

Regulatory Framework

AAQS have been promulgated at the local, state, and federal levels for criteria pollutants. The Proposed Project Site is in the SoCAB and is subject to the rules and regulations imposed by the SCAQMD, as well as, the California Ambient Air Quality Standards ("CAAQS") adopted by CARB and federal National Ambient Air Quality Standards ("NAAQS").

Ambient Air Quality Standards

The Clean Air Act (CAA) was passed in 1963 by the US Congress and has been amended several times. The 1970 Clean Air Act amendments strengthened previous legislation and laid the foundation for the regulatory scheme of the 1970s and 1980s. In 1977, Congress again added several provisions, including nonattainment requirements for areas not meeting NAAQS and the Prevention of Significant Deterioration program. The 1990 amendments represent the latest in a series of federal efforts to regulate the protection of air quality in the United States. The CAA allows states to adopt more stringent standards or to include other pollution species. The California Clean Air Act (CCAA), signed into law in 1988, requires all areas of the state to achieve and maintain the CAAQS by the earliest practical date. The

CAAQS tend to be more restrictive than the NAAQS and are based on even greater health and welfare concerns.

These NAAQS and CAAQS are the levels of air quality considered to provide a margin of safety in the protection of the public health and welfare. They are designed to protect those "sensitive receptors" most susceptible to further respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

Both California and the federal government have established health-based AAQS for seven air pollutants. As shown in Table 5.2-1, these pollutants include O_3, NO_2, CO, SO_2, PM_{10}, $PM_{2.5}$, and lead (Pb). In addition, the state has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.

Table 5.2-1
Ambient Air Quality Standards for Criteria Pollutants

Pollutant	Averaging Time	California Standard	Federal Primary Standard	Major Pollutant Sources
Ozone (O_3)	1 hour	0.09 ppm	*	Motor vehicles, paints, coatings, and solvents.
	8 hours	0.070 ppm	0.075 ppm	
Carbon Monoxide (CO)	1 hour	20 ppm	35 ppm	Internal combustion engines, primarily gasoline-powered motor vehicles.
	8 hours	9.0 ppm	9 ppm	
Nitrogen Dioxide (NO_2)	Annual Average	0.030 ppm	0.053 ppm	Motor vehicles, petroleum-refining operations, industrial sources, aircraft, ships, and railroads.
	1 hour	0.18 ppm	0.100 ppm	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	*	0.030 ppm[2]	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
	1 hour	0.25 ppm	0.075 ppm[1]	
	24 hours	0.04 ppm	0.014 ppm[2]	
Respirable Coarse Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 µg/m^3	*	Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	24 hours	50 µg/m^3	150 µg/m^3	
Respirable Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	12 µg/m^3	12 µg/m^3	Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	24 hours	*	35 µg/m^3	
Lead (Pb)	Monthly	1.5 µg/m^3	*	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
	Quarterly	*	1.5 µg/m^3	
	3-Month Average	*	0.15 µg/m^3	

Table 5.2-1
Ambient Air Quality Standards for Criteria Pollutants

Pollutant	Averaging Time	California Standard	Federal Primary Standard	Major Pollutant Sources
Sulfates (SO_4)	24 hours	25 µg/m^3	*	Industrial processes.
Visibility Reducing Particles	8 hours	ExCo =0.23/km visibility of 10≥ miles[1]	No Federal Standard	Visibility-reducing particles consist of suspended particulate matter, which is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil, dust, and salt.
Hydrogen Sulfide	1 hour	0.03 ppm	No Federal Standard	Hydrogen sulfide (H2S) is a colorless gas with the odor of rotten eggs. It is formed during bacterial decomposition of sulfur-containing organic substances. Also, it can be present in sewer gas and some natural gas, and can be emitted as the result of geothermal energy exploitation.
Vinyl Chloride	24 hour	0.01 ppm	No Federal Standard	Vinyl chloride (chloroethene), a chlorinated hydrocarbon, is a colorless gas with a mild, sweet odor. Most vinyl chloride is used to make polyvinyl chloride (PVC) plastic and vinyl products. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites, due to microbial breakdown of chlorinated solvents.

Source: CARB 2013
ppm: parts per million; $\mu g/m^3$: micrograms per cubic meter
[1] When relative humidity is less than 70 percent.
[2] On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.
* Standard has not been established for this pollutant/duration by this entity.

Air Quality Management Planning

SCAQMD is the agency responsible for preparing the air quality management plan (AQMP) for the SoCAB in coordination with the Southern California Association of Governments (SCAG). Since 1979, a number of AQMPs have been prepared.

2012 AQMP

On December 7, 2012 SCAQMD adopted the 2012 AQMP (Plan), which employs the most up-to-date science and analytical tools and incorporates a comprehensive strategy aimed at controlling pollution from all sources, including stationary sources, on-road and off-road mobile sources, and area sources. The Plan also addresses several state and federal planning requirements, incorporating new scientific information, primarily in the form of updated emissions inventories, ambient measurements, and new meteorological air quality models. The Plan builds upon the approach identified in the 2007 AQMP for

attainment of federal PM and ozone standards, and highlights the significant amount of reductions needed and the urgent need to engage in interagency coordinated planning to identify additional strategies, especially in the area of mobile sources, to meet all federal criteria air pollutant standards within the timeframes allowed under the Federal CAA. The Plan demonstrates attainment of federal 24-hour $PM_{2.5}$ standard by 2014 and the federal 8-hour ozone standard by 2023. The Plan includes an update to the revised EPA 8-hour ozone control plan with new commitments for short-term NO_X and VOC reductions. In addition, it also identifies emerging issues of ultrafine ($PM_{1.0}$) particulate matter and near-roadway exposure, and an analysis of energy supply and demand.

Lead State Implementation Plan

In 2008 EPA designated the Los Angeles County portion of the SoCAB nonattainment under the federal lead (Pb) classification due to the addition of source-specific monitoring under the new federal regulation. This designation was based on two source-specific monitors in Vernon and the City of Industry exceeding the new standard. The rest of the SoCAB, outside the Los Angeles County nonattainment area remains in attainment of the new standard. On May 24, 2012, CARB approved the SIP revision for the federal lead standard, which the EPA revised in 2008. Lead concentrations in this nonattainment area have been below the level of the federal standard since December 2011. The SIP revision was submitted to EPA for approval.

Area Designations

The AQMP provides the framework for air quality basins to achieve attainment of the state and federal ambient air quality standards through the State Implementation Plan (SIP). Areas are classified as attainment or nonattainment areas for particular pollutants, depending on whether they meet ambient air quality standards. Severity classifications for ozone nonattainment range in magnitude from marginal, moderate, and serious to severe and extreme.

- **Unclassified:** a pollutant is designated unclassified if the data are incomplete and do not support a designation of attainment or nonattainment.

- **Attainment:** a pollutant is in attainment if the CAAQS for that pollutant was not violated at any site in the area during a three-year period.

- **Nonattainment:** a pollutant is in nonattainment if there was at least one violation of a state AAQS for that pollutant in the area.

- **Nonattainment/Transitional:** a subcategory of the nonattainment designation. An area is designated nonattainment/transitional to signify that the area is close to attaining the AAQS for that pollutant.

The attainment status for the SoCAB is shown in Table 5.2-2. The SoCAB is also designated in attainment of the California AAQS for sulfates. According to the 2007 AQMP, the SoCAB will have to meet the new federal 8-hour O_3 standard by 2024, $PM_{2.5}$ standards by 2015, and the recently revised 24-hour $PM_{2.5}$ standard by 2020. SCAQMD has recently designated the SoCAB as nonattainment for NO_2 (entire basin) and lead (Los Angeles County only) under the California AAQS. Transportation conformity for nonattainment and maintenance areas is required under the Federal CAA to ensure federally supported highway and transit projects conform to the SIP. The U.S. EPA approved California's SIP revisions for attainment of the 1997 8-hour O_3 National AAQS for the SoCAB in March 2012. Findings for the new 8-

hour O_3 emissions budgets for the SoCAB and consistency with the recently adopted 2012 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) were submitted to the U.S. EPA for approval.

Table 5.2-2
Attainment Status of Criteria Pollutants in the South Coast Air Basin

Pollutant	State	Federal
Ozone – 1-hour	Extreme Nonattainment	No Federal Standard
Ozone – 8-hour	Extreme Nonattainment	Severe-17 Nonattainment[1]
PM_{10}	Serious Nonattainment	Nonattainment[2]
$PM_{2.5}$	Nonattainment	Nonattainment
CO	Attainment	Attainment
NO_2	Nonattainment	Attainment/Maintenance
SO_2	Attainment	Attainment
Lead	Nonattainment (Los Angeles County only)[3]	Nonattainment (Los Angeles County only)[3]
All others	Attainment/Unclassified	Attainment/Unclassified

Source: CARB 2013.
[1] SCAQMD may petition for Extreme Nonattainment designation.
[2] Annual standard revoked September 2006. CARB approved SCAQMD's request to redesignate the SoCAB from serious nonattainment for PM_{10} to attainment for PM_{10} under the National AAQS on March 25, 2010, because the SoCAB has not violated federal 24-hour PM_{10} standards from 2004 to 2007. However, the EPA has not yet approved this request.
[3] The Los Angeles portion of the SoCAB was designated nonattainment for lead under the new federal and existing state AAQS as a result of large industrial emitters. Remaining areas within the SoCAB are unclassified.
[4] On May 24, 2012, CARB approved the State Implementation Plan (SIP) revision for the federal lead (Pb) standard, which EPA revised in 2008. The SIP revision addresses attainment of the federal lead standard in the SoCAB portion of Los Angeles County, the only area in California designated as nonattainment for lead. Lead concentrations in this nonattainment area have been below the level of the federal standard since December 2011. The SIP revision was submitted to EPA for approval.

Existing Ambient Air Quality

Existing levels of ambient air quality and historical trends and projections in the vicinity of the Proposed Project Site and Irvine are best documented by measurements made by SCAQMD. The Proposed Project Site is located within Source Receptor Area (SRA) 19 – Saddleback Valley (Central Orange County). The air quality monitoring station closest to the Proposed Project Site is the Mission Viejo Monitoring Station. However, this station does not monitor NO_2 or SO_x. Consequently, data was obtained from the Costa Mesa Monitoring Station for these criteria pollutants. Data from these stations are summarized in Table 5.2-3. The data shows that the area occasionally exceeds the state and federal one-hour and eight-hour O_3 standards. The data also indicates that the area occasionally exceeds the state PM_{10} and federal $PM_{2.5}$ standards. The federal PM_{10} standard has not been violated in the last five years at the Costa Mesa Monitoring Station. The CO, SO_2, or NO_2 standard have not been violated in the last five years at the Mission Viejo (CO) and Costa Mesa (SO_2 and NO_2) Monitoring Stations.

Table 5.2-3
Ambient Air Quality Monitoring Summary

Pollutant/Standard	Number of Days Threshold Were Exceeded and Maximum Concentration Levels During Such Violations				
	2008	2009	2010	2011	2012
Ozone (O_3)[1]					
State 1-Hour ≥ 0.09 ppm	9	7	2	0	2
State 8-hour ≥ 0.07 ppm	3	0	1	1	1
Federal 8-Hour > 0.075[2] ppm	5	3	2	2	1
Max. 1-Hour Conc. (ppm)	0.118	0.121	0.117	0.094	0.096
Max. 8-Hour Conc. (ppm)	0.079	0.072	0.076	0.077	0.076
Carbon Monoxide (CO)[1]					
State 8-Hour > 9.0 ppm	0	0	0	0	0
Federal 8-Hour ≥ 9.0 ppm	0	0	0	0	0
Max. 8-Hour Conc. (ppm)	1.97	2.16	2.09	2.22	1.71
Nitrogen Dioxide (NO_2)[2]					
State 1-Hour ≥ 0.18[4] ppm	0	0	0	0	0
Max. 1-Hour Conc. (ppm)	81	65	70	65.5	74.4
Sulfur Dioxide (SO_2)[2]					
State 1-Hour ≥ 0.04 ppm	0	-	-	-	-
Max. 1-Hour Conc. (ppm)	0.003	-	-	-	-
Coarse Particulates (PM_{10})[1]					
State 24-Hour > 50 µg/m^3	0	0	0	0	0
Federal 24-Hour > 150 µg/m^3	0	1	0	0	0
Max. 24-Hour Conc. (µg/m^3)	42	56	34	48	37
Fine Particulates ($PM_{2.5}$)[1]					
Federal 24-Hour > 35[5,6] µg/m^3	0	1	0	0	0
Max. 24-Hour Conc. (µg/m^3)	32.6	39.2	10	33.4	27.6

Source: CARB 2013
ppm: parts per million; µg/m^3: or micrograms per cubic meter; NS: No Standard.
[1] Data obtained from the Costa Mesa Monitoring Station at Costa Mesa-Mesa Verde Drive at 2850 Mesa V
[2] Data obtained from the Mission Viejo Monitoring Station at 26081 Via Pera, Mission Viejo, CA 92691. SO_2 data is unavailable for the years 2009 - 2012.

Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardiorespiratory diseases.

Residential areas are also considered to be sensitive receptors to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Other sensitive receptors include retirement facilities, hospitals, and schools. Recreational land uses are considered moderately sensitive to air pollution. Although exposure periods are generally short, exercise places a high demand on respiratory functions, which can be impaired by air pollution. In addition, noticeable air pollution can detract from the enjoyment of recreation. Industrial, commercial, retail, and office areas are considered the least sensitive to air pollution. Exposure periods are relatively short and intermittent, as the majority of the workers tend to stay indoors most of the time. In addition, the working population is generally the healthiest segment of the public (SCAQMD 1993, SCAQMD 2003, SCAQMD 2005).

5.2.2 Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, the City has determined that a project would normally have a significant effect on the environment if the project would:

AQ-1 Conflict with or obstruct implementation of the applicable air quality plan.

AQ-2 Violate any air quality standard or contribute substantially to an existing or projected air quality violation.

AQ-3 Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).

AQ-4 Expose sensitive receptors to substantial pollutant concentrations.

AQ-5 Is the boundary of the proposed school site within 500 feet of the edge of the closest traffic lane of a freeway or busy traffic corridor. If yes, would the project create an air quality health risk due to the placement of the school.

AQ-6 Create objectionable odors affecting a substantial number of people.

The following impacts were identified as No Impact in the Initial Study (see Appendix A):

- Impacts AQ-5 and AQ-6

South Coast Air Quality Management District Thresholds

Regional Significance Thresholds

CEQA allows for a lead agency to utilize the significance criteria established by the applicable air quality management or air pollution control district to assess the significance of a project's impacts on air quality. The SCAQMD has established thresholds of significance for air quality for construction activities and project operation as shown in Table 5.2-4. There are other state and federal criteria pollutants such as lead (state and federal) and hydrogen sulfide (state only) that are not relevant to this analysis.

Table 5.2-4
SCAQMD Regional Significance Thresholds

Air Pollutant	Construction Phase	Operational Phase
Volatile Organic Compounds (VOC)	75 lbs/day	55 lbs/day
Nitrogen Oxides (NO_X)	100 lbs/day	55 lbs/day
Carbon Monoxide (CO)	550 lbs/day	550 lbs/day
Sulfur Oxides (SO_X)	150 lbs/day	150 lbs/day
Particulates (PM_{10})	150 lbs/day	150 lbs/day
Fine particulates ($PM_{2.5}$)	55 lbs/day	55 lbs/day
Lead (Pb)[1]	3 lbs/day	3 lbs/day

Source: SCAQMD 2011
[1] Lead is typically generated by industrial project and is not a pollutant of concern for the 2011 Approved Project or the Proposed Project.

CO Hotspot Thresholds

Localized CO impacts are determined based on the presence of congested intersections. The significance of localized project impacts depends on whether the project would cause substantial concentrations of CO. A project is considered to have a significant impact if project-related mobile-source emissions result in an exceedance of the California one-hour and eight-hour CO standards, which are:

- 1 hour = 20 parts per million
- 8 hour = 9 parts per million

Localized Significance Thresholds

SCAQMD developed localized significance thresholds (LSTs) for emissions of NO_2, CO, PM_{10}, and $PM_{2.5}$ generated at the project site (offsite mobile-source emissions are not included the LST analysis). LSTs represent the maximum emissions at a project site that are not expected to cause or contribute to an exceedance of the most stringent federal or state AAQS and are shown in Table 5.2-5, *SCAQMD Localized Significance Thresholds: Projects over 5 Acres*.

Table 5.2-5
SCAQMD Localized Significance Thresholds: Projects over 5 Acres

Air Pollutant (Relevant AAQS)	Concentration
1-Hour CO Standard (CAAQS)	20 ppm
8-Hour CO Standard (CAAQS)	9.0 ppm
1-Hour NO2 Standard (CAAQS)	0.18 ppm
24-Hour PM10 Standard – Construction (SCAQMD)1	10.4 µg/m3
24-Hour PM2.5 Standard – Construction (SCAQMD)1	10.4 µg/m3
24-Hour PM10 Standard – Operation (SCAQMD)1	2.5 µg/m3
24-Hour PM2.5 Standard – Operation (SCAQMD)1	2.5 µg/m3

ppm – parts per million; $\mu g/m^3$ – micrograms per cubic meter
[1] Threshold is based on SCAQMD Rule 403. Since the SSAB is in nonattainment for PM_{10} and $PM_{2.5}$, the threshold is established as an allowable change in concentration. Therefore, background concentration is irrelevant.

To assist lead agencies, SCAQMD developed screening-level LSTs to back-calculate the mass amount (lbs. per day) of emissions generated onsite that would trigger the levels shown in Table 5.2-6, *SCAQMD Localized Significance Thresholds: Projects under 5 Acres*. Screening-level LST analyses for construction are the localized significance thresholds for all projects of five acres and less; however, it can be used as screening criteria for larger projects to determine whether or not dispersion modeling may be required to compare concentrations of air pollutants generated by the project to the localized concentrations shown in Table 5.2-5.

LSTs are based on the ambient concentrations of that pollutant within the project SRA and the distance to the nearest sensitive receptor. In accordance with SCAQMD's LST methodology, construction LSTs are based on the acreage disturbed per day based on equipment use. Based on the anticipated equipment use, construction activities would disturb over 5.0 acres per day during grading, and therefore the 5.0-acre LSTs are used as the screening criteria for this phase of construction. The construction LST in SRA 19 is shown in Table 5.2-6 for sensitive receptors within 600 feet (183 meters).

Table 5.2-6
SCAQMD Localized Significance Thresholds: Projects Under 5 Acres

Air Pollutant	Construction Threshold (lbs/day)		
	Fine Grading[1]	Fine Grading and Utility Trenching[2]	Building Construction, Coatings, Paving and Landscaping[3]
Nitrogen Oxides (NO_X)	218	218	148
Carbon Monoxide (CO)	4,109	4,109	2,464
Coarse Particulates (PM_{10})	461	461	436
Fine Particulates ($PM_{2.5}$)	344	344	285

Source: SCAQMD 2003; SCAQMD 2006, Based on receptors in SRA 19.
Notes: LSTs are based on receptors at 600 feet (183 meters).
[1] LSTs are based on 1.00 acres disturbed per day.
[2] LSTs are based on 5.0 acres disturbed per day.
[3] LSTs are based on 1.0 acres disturbed per day.

Health Risk Analysis

Whenever project activities would include the use of chemical compounds that have been identified in SCAQMD Rule 1401 relating to TACs, placed on CARB's TAC list pursuant to AB 1807, or placed on the EPA's National Emissions Standards for Hazardous Air Pollutants, a health risk assessment is required by the SCAQMD. Table 5.2-7 lists the SCAQMD's TAC incremental risk thresholds for operation of a project. Residential, commercial, and office uses do not use substantial quantities of TACs and these thresholds are typically applied for new industrial projects. A health risk assessments was not performed for stationary sources for the Proposed Project because the Proposed Project does not propose changes to the types of non-residential land uses identified by the 2011 Approved Project.

Table 5.2-7
SCAQMD Toxic Air Contaminants Incremental Risk Thresholds

Maximum Individual Cancer Risk	≥ 10 in 1 million
Cancer Burden	≥ 0.5 excess cancer cases (in areas ≥ 1 in 1 million)
Hazard Index (project increment)	≥ 1.0

Source: SCAQMD 2011

5.2.3 2011 Approved Project

In analyzing the air quality related impacts of the 2011 Approved Project, the Certified EIR used SCAQMD's CEQA Air Quality Handbook methodologies and thresholds and identified the following conclusions regarding the air quality emissions.

AQMP Consistency: The Certified EIR concluded that the emissions from the residential and non-residential land uses of the 2011 Approved Project would not impair SCAQMD's ability to meet National AAQS or California AAQS.

Construction-Related Regional Air Quality Impacts: The Certified EIR concluded that construction air emissions would be above the significance thresholds for VOC, CO, NO_X, PM_{10}, and $PM_{2.5}$. The Certified EIR identified construction air impacts after mitigation as significant and unavoidable.

Operational Phase Regional Air Quality Impacts: The Certified EIR concluded that the operational emissions would exceed the significance thresholds for VOC, NO_X, CO, and $PM_{2.5}$, and would be significant after mitigation. Accordingly, the operational emissions were identified as a significant and unavoidable impact.

Localized Air Quality Impacts: The Certified EIR relied on an analysis that performed dispersion modeling to determine maximum localized concentrations of CO, NO_X, PM_{10}, and $PM_{2.5}$ emissions at individual sensitive receptor locations during construction. It was concluded that the 2011 Approved Project would not result in significant impacts on local air quality resulting from construction. In addition, the Certified EIR demonstrated that there would be no CO exceedances caused by vehicular emissions when idling at intersections, therefore localized CO "hotspot" impacts of the 2011 Approved Project would be less than significant.

Cumulative Impacts: The Certified EIR concluded that even with the implementation of mitigation measures, PPPs, and PDFs, the 2011 Approved Project's construction emissions would exceed the SCAQMD significance thresholds for VOC, NO_X, CO, PM_{10}, and $PM_{2.5}$. Therefore, the 2011 Approved Project's contribution to cumulative air quality impacts was determined to be significant and unavoidable.

For long-term operations, the Certified EIR concluded that regional operational emissions of CO, VOC, NO_X, and $PM_{2.5}$ would be cumulatively considerable. No significant cumulative impacts were identified with regard to CO hot spots.

5.2.4 2012 Modified Project

AQMP Consistency: The 2012 SSEIR concluded that the emissions from the residential and non-residential land uses of the 2012 Approved Project would not impair SCAQMD's ability to meet National AAQS or California AAQS.

Construction-Related Regional Air Quality Impacts: The 2012 SSEIR concluded that construction air emissions would be above the significance thresholds for VOC, CO, NO_X, PM_{10}, and $PM_{2.5}$. The 2012 SSEIR identified construction air impacts after mitigation as significant and unavoidable.

Operational Phase Regional Air Quality Impacts: The 2012 SSEIR concluded that the operational emissions would exceed the significance thresholds for VOC, NO_X, CO, and $PM_{2.5}$, and would be significant after mitigation. Accordingly, the operational emissions were identified as a significant and unavoidable impact.

Localized Air Quality Impacts: The 2012 SSEIR relied on an analysis that performed dispersion modeling to determine maximum localized concentrations of CO, NO_X, PM_{10}, and $PM_{2.5}$ emissions at individual sensitive receptor locations during construction. It was concluded that the 2012 Modified Project would not result in significant impacts on local air quality resulting from construction. In addition, the Certified EIR demonstrated that there would be no CO exceedances caused by vehicular emissions when idling at intersections, therefore localized CO "hotspot" impacts of the 2012 Modified Project would be less than significant.

Cumulative Impacts: The 2012 SSEIR concluded that even with the implementation of mitigation measures, PPPs, and PDFs, the 2011 Approved Project's construction emissions would exceed the SCAQMD significance thresholds for VOC, NO_X, CO, PM_{10}, and $PM_{2.5}$. Therefore, the 2012 Modified Project's contribution to cumulative air quality impacts was determined to be significant and unavoidable.

For long-term operations, the 2012 SSEIR concluded that regional operational emissions of CO, VOC, NO_X, and $PM_{2.5}$ would be cumulatively considerable. No significant cumulative impacts were identified with regard to CO hot spots.

5.2.5 Environmental Impacts of High School No. 5

Modeling Methodology

Construction and operational phase emissions for the Proposed Project were calculated using the California Emission Estimator Model (CalEEMod) Version 2013.2. The analysis includes the following emission sources (see Appendix C for additional details regarding modeling methodology and assumptions)

Existing Plans, Programs, and Policies

The following measures are existing plans, programs, or policies ("PPP") that apply to both the 2011 Approved Project and the 2012 Modified Project that will help to reduce and avoid their respective potential impacts related to air quality:

PPP 3-1 **SCAQMD Rule 201 – Permit to Construct:** The SCAQMD requires developers who build, install, or replace any equipment or agricultural permit unit, which may cause new emissions of or reduce, eliminate, or control emissions of air contaminants to obtain a permit to construct from the Executive Officer.

PPP 3-2 **SCAQMD Rule 402 – Nuisance Odors:** The SCAQMD prohibits the discharge of any 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 to be emitted within the SoCAB.

PPP 3-3 **SCAQMD Rule 403 – Fugitive Dust (PM_{10} and $PM_{2.5}$):** The SCAQMD prohibits any person to cause or allow the emissions of fugitive dust from any active operation, open storage pile, or disturbed surface area such that: (a) the dust remains visible in the atmosphere beyond the property line of the emission source; or (b) the dust emission exceeds 20 percent opacity (as determined by the appropriate test method included in the Rule 403 Implementation Handbook) if the dust emission is the result of movement of a motorized vehicle.

Additional Plans, Programs, and Policies

In addition to the PPPs identified above, the District will be subject to the existing standards below and the applicable PPPs have been modified and renumbered as they apply to this DSEIR.

IUSD 2-1 **Building Energy Efficiency:** Buildings will be constructed with the goal of achieving a 20 percent higher energy efficiency than the applicable standards set forth in the 2008 California Building and Energy Efficiency Standards (Title 24, Part 6 of the California Building Code) or meet the standards in effect at the time of issuance of building permit.

IUSD 2-2 **SCAQMD Rule 201 – Permit to Construct:** The SCAQMD requires developers who build, install, or replace any equipment or agricultural permit unit, which may cause new emissions of or reduce, eliminate, or control emissions of air contaminants to obtain a permit to construct from the Executive Officer.

IUSD 2-3 **SCAQMD Rule 402 – Nuisance Odors:** The SCAQMD prohibits the discharge of any 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 to be emitted within the SoCAB.

IUSD 2-4 **SCAQMD Rule 403 – Fugitive Dust (PM_{10} and $PM_{2.5}$):** The SCAQMD prohibits any person to cause or allow the emissions of fugitive dust from any active operation, open storage pile, or disturbed surface area such that: (a) the dust remains visible in the atmosphere beyond the property line of the emission source; or (b) the dust emission exceeds 20 percent opacity (as determined by the appropriate test method included in the Rule 403 Implementation Handbook) if the dust emission is the result of movement of a motorized vehicle.

The following impact analysis addresses impacts that the Initial Study for the Proposed Project disclosed as potentially significant impacts of the Proposed Project, as compared to the 2011 Approved Project. The applicable potential impacts are identified in brackets after the impact statement.

IMPACT 5.2-1: LIKE THE 2011 APPROVED PROJECT, THE PROPOSED PROJECT IS CONSISTENT WITH THE APPLICABLE AIR QUALITY MANAGEMENT PLAN. [IMPACT AQ-1]

Impact Analysis:

2011 Approved Project

A consistency determination with the AQMP plays an important role in local agency project review by linking local planning and individual projects to the AQMP. It fulfills the CEQA goal of informing decision makers of the environmental efforts of the project under consideration early enough to ensure that air quality concerns are fully addressed. It also provides the local agency with ongoing information as to whether they are contributing to the clean air goals in the AQMP.

The regional emissions inventory for the SoCAB is compiled by SCAQMD and SCAG. Regional population, housing, and employment projections developed by SCAG are based, in part, on the city's general plan land use designations. These projections form the foundation for the emissions inventory of the AQMP. These demographic trends are incorporated into the RTP/SCS), compiled by SCAG to determine priority transportation projects and vehicle miles traveled (VMT) within the SCAG region. The

AQMP strategy is based on projections from local general plans. Projects that are consistent with the local general plan are considered consistent with the air quality-related regional plan.

Changes in the population, housing, or employment growth projections associated with this project have the potential to affect SCAG's demographic projections and therefore the assumptions in SCAQMD's AQMP. The Certified EIR concluded that implementation of the 2011 Approved Project would be consistent with the City's General Plan land use plan, goals and policies and the City's Zoning Ordinance, and SCAG's regional policies. Also, in its finding, the Certified EIR concluded the project to be consistent with the 2007 AQMP. Accordingly, the Certified EIR concluded that less than significant land use impacts would occur. SCAQMD has adopted a new AQMP, the 2012 AQMP, since certification of the 2011 EIR, Under the Proposed Project, the Project Site is designated as a 2,600-student high school. The Proposed Project would be consistent with the City of Irvine General Plan. Furthermore, the Proposed Project would not result in a substantial increase in magnitude of emissions compared to the 2011 EIR. The Proposed Project would accommodate demand for a high school with in the District's boundaries. The Proposed Project would be considered consistent with the AQMP.

Mitigation Program and Net Impact

No mitigation measures are introduced here in this DSEIR as net impact on AQMP would be less than significant.

2012 Modified Project

Under the 2012 Modified Project, the Project Site is designated a 2,600-student high school. The Proposed Project would be compatible with the uses proposed under the 2012 Modified Project and no adverse AQMP impacts are anticipated. The overall impact analysis of the Proposed Project would be generally the same as the analysis for the 2011 Approved Project, and no significant impacts are anticipated.

Mitigation Program and Net Impact

No mitigation measures are introduced here in this DSEIR as net impact on AQMP would be less than significant.

IMPACT 5.2-2: CONSTRUCTION EMISSIONS OF THE PROPOSED PROJECT WOULD, LIKE THE 2011 APPROVED PROJECT, EXCEED SCAQMD'S EMISSIONS THRESHOLDS FOR VOC. [IMPACT AQ-2 AND AQ-3]

Impact Analysis:

2011 Approved Project

Construction activities produce combustion emissions from various sources, such as onsite heavy-duty construction vehicles, vehicles hauling materials to and from the site, and motor vehicles transporting the construction crew. Site preparation activities produce fugitive dust emissions (PM_{10} and $PM_{2.5}$) from demolition and soil-disturbing activities, such as grading and excavation. Air pollutant emissions from construction activities onsite would vary daily as construction activity levels change.

The Certified EIR concluded that mass criteria air pollutant emissions of SO_2 would be less than the applicable mass daily threshold, and are therefore, less than significant, whereas mass criteria air pollutant emissions of VOC, NO_x, CO, PM_{10}, and $PM_{2.5}$ would be greater than the applicable SCAQMD mass daily thresholds and are therefore significant.

The Proposed Project is construction and operation of a high school with a capacity of 2,600 students, including other educational infrastructure, within the Great Park Neighborhoods. The Proposed Project would be constructed over an approximately 16-month period. Construction air pollutant emissions are based on the preliminary phasing schedule provided by the District and would include utility installation, grading, architectural coatings, landscaping and paving. An estimate of maximum daily construction emissions for the Proposed Project is provided in Table 5.2-8 and includes emissions reductions from application of Mitigation Measures AQ-1 and AQ-2 of the Certified EIR for the 2011 Approved Project.

Table 5.2-8
Maximum Daily Construction Regional Emissions With Mitigation Measures included in the 2011 Approved Project

Construction Phase	Criteria Air Pollutant Emissions (lbs/day)[1,2]					
	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Site Preparation Phases						
Trenching Utilities	1	8	13	<1	1	<1
Fine Grading	3	45	59	<1	6	4
Overlap (Trenching Utilities + Fine Grading)	4	53	72	<1	7	4
Building Construction 2014	13	37	67	<1	6	3
Building Construction 2015	12	35	63	<1	6	3
Building Construction 2016	11	33	60	<1	6	2
Architectural Coatings 2015	157	2	7	<1	1	<1
Architectural Coatings 2016	157	2	6	<1	1	<1
Finishing/Landscaping 2016	11	30	59	<1	6	2
Paving	2	17	26	<1	1	1
Overlap (Building Construction 2015 + Architectural Coatings 2015)	169	37	70	<1	7	3
Overlap (Building Construction 2016 + Architectural Coatings 2016 + Finishing/Landscaping 2016 + Paving 2016)	181	82	151	<1	14	6
Maximum Daily Construction Emissions	181[3]	82[3]	151[3]	<1[3]	14[4]	6[3]
SCAQMD Regional Significance Threshold	75	100	550	150	150	55
Exceeds Significance Threshold?	**Yes**	No	No	No	No	No

Source: CalEEMod Version 2013.2
Notes: Totals may not total to 100 percent due to rounding.
[1] Construction phasing is based on the preliminary information provided by the project applicant. Where specific information regarding project-related construction activities was not available, construction assumptions were based on CalEEMod defaults, which are based on construction surveys conducted by SCAQMD of construction equipment and phasing for comparable projects.
[2] Includes implementation of fugitive dust control measures required by SCAQMD under Rule 403 and 403.1, including watering disturbed areas a minimum of three times per day, reducing speed limit to 15 miles per hour on unpaved surfaces, replacing ground cover quickly, and street sweeping with Rule 1186-compliant sweepers. Modeling also assumes a VOC of 100 g/L pursuant to SCAQMD Rule 1113, use of Tier 3 equipment for all phases (Mitigation Measure AQ-1, as modified, from the 2011 EIR).
[3] From Overlap of Building Construction, Architectural Coatings, Finishing/Landscaping and Paving phases [2016]
[4] From Overlap of Utility Trenching and Fine Grading phases.

Table 5.2-8 shows that VOC emissions would exceed SCAQMD regional significance threshold values and would be significant. However, the Certified EIR reported significant emissions of criteria air pollutants from construction activities, with the exception of SO_2. Although VOC emissions would exceed the regional thresholds, additional mitigation measures would reduce VOC emissions to less than their regional significance threshold.

Mitigation Program and Net Impact

Mitigation measures are required to reduce VOC emissions under the regional significance threshold as listed under the sub-section 5.2.9, *Additional Mitigation Measures*. Mitigation Measures AQ-1 and AQ-2 have been incorporated in this DSEIR to reduce impacts to a less than significant level. Consequently, the

Proposed Project would not result in a substantial increase in magnitude of construction-related air quality impacts compared to the 2011 Approved Project, where it was determined to have a significant and unavoidable impact.

2012 Modified Project

Under the 2012 Modified Project, the Project Site is designated a 2,600-student high school. The Proposed Project would be compatible with the uses proposed under the 2012 Modified Project and the overall construction emissions impacts analysis of the Proposed Project would be generally the same as the analysis for the 2011 Approved Project.

Mitigation Program and Net Impact

The same mitigation measures (AQ-1 and AQ-2) identified under the 2011 Approved would be required to reduce impacts to a less than significant level.

IMPACT 5.2-3: LONG-TERM OPERATION OF THE PROPOSED PROJECT WOULD, LIKE THE 2011 APPROVED PROJECT, WOULD EXCEED SCAQMD'S EMISSIONS THRESHOLDS FOR VOC. [IMPACT AQ-2 AND AQ-3]

Impact Analysis:

2011 Approved Project

Build out of the Proposed Project would result in direct and indirect criteria air pollutant emissions from transportation, area sources (e.g., landscaping equipment), and energy use. Transportation sources of criteria air pollutant emission are based on trip generation rates provided by IBI Group and the District's event schedule. Criteria air pollutant emissions were modeled using CalEEMod. The results of the criteria air pollutant modeling for the proposed project are included in Table 5.2-8. Buildout the Proposed Project is forecast to occur by 2016. Impacts are based on criteria air pollutant emissions generated by two scenarios: A) on a typical high school day without a capacity event; B) on a high school day with a capacity event.

Capacity events would occur six times per year (five varsity football games and graduation). Capacity events, such as graduation and varsity football games would have an expected attendance of 2,940 people. As shown in this table, the project generated operational emissions would exceed the SCAQMD's regional significance thresholds for VOC, on days with and without a capacity stadium event. Therefore, criteria air pollutant emissions generated by the Proposed Project would be significant and unavoidable.

The Certified EIR included the Project Site. Operational emissions for both the Proposed Project and emissions reported in the 2011 Approved Project are shown in Table 5.2-9.

Table 5.2-9
Maximum Daily Operational Phase Emission Comparison

Summary	Maximum Daily Emissions (lbs/day) – Winter or Summer					
	VOC	NOx	CO	SO_2	PM_{10}	$PM_{2.5}$
2011Approved Project [1]	625	2,729	489	10	91	64
SCAQMD Threshold	55	55	550	150	150	55
Exceeds Threshold?	**Yes**	**Yes**	No	No	No	Yes
Comparison of the Proposed Project with Capacity Events to the Certified EIR	499	2,692	226	9	31	47
SCAQMD Regional Significance Threshold	55	55	550	150	150	55
Substantial Increase Compared to 2011 EIR	No	No	No	No	No	No
Proposed Project (Typical School Day)						
Area	19	<1	<1	0	<1	<1
Energy	<1	1	1	<1	<1	<1
Mobile	61	24	176	1	41	11
Total Operational Emissions	80	25	177	1	41	11
SCAQMD Threshold	55	55	550	150	150	55
Exceeds Threshold?	**Yes**	No	No	No	No	No
Proposed Project (School Day with at Capacity Event)						
Area	35	<1	<1	0	<1	<1
Energy	<1	1	1	<1	<1	<1
Mobile	91	36	262	1	60	16
Total Operational Emissions	126	37	263	1	60	17
SCAQMD Threshold	55	55	550	150	150	55
Exceeds Threshold?	**Yes**	No	No	No	No	No

Source: CalEEMod Version 2013.2. Based on highest winter or summer emissions
Bold = Exceeds SCAQMD Threshold
Note: Totals may not total to 100 percent due to rounding.
[1] Source: ENVIRON 2011.

As shown in Table 5.2-9, like those of the 2011 Approved Project, the operational emissions for the Proposed Project would exceed the SCAQMD's thresholds for VOC emissions. However unlike the 2011 Approved Project, the Proposed Project's emissions do not exceed SCAQMD's mass emissions thresholds for NO_x, CO, PM_{10}, or $PM_{2.5}$. In addition, the Proposed Project has lower emissions than the 2011 Approved Project's emissions. There is an exceedance of regional significance thresholds for VOC emissions. Therefore, like the 2011 Approved Project, even with mitigation, the operational emissions of the Proposed Project are considered to be significant and unavoidable.

Mitigation Program and Net Impact

The Proposed Project would incorporate Mitigation Measure AQ-3 and AQ-4 as part of this DSEIR to reduce operational emissions for VOD. However, as shown in Table 5.2-8, unlike the 2011 Approved Project, the Proposed Project would not exceed the SCAQMD threshold for NO_x. As with the 2011 Approved Project, the operational emissions of the Proposed Project are considered to be significant and unavoidable even with mitigation measures.

2012 Modified Project

Under the 2012 Modified Project, the Project Site is designated a 2,600-student high school. The Proposed Project would be compatible with the uses proposed under the 2012 Modified Project and the overall operational emissions impacts analysis of the Proposed Project would be the same as the analysis for the 2011 Approved Project.

Mitigation Program and Net Impact

The same mitigation measures (AQ-3 and AQ-4) identified under the 2011 Approved would be required to be implemented. However, as with the 2011 Approved Project, the Proposed Project would result in significant and unavoidable operational emissions impact.

IMPACT 5.2-4: AS COMPARED TO THE 2011 APPROVED PROJECT, CONSTRUCTION OF THE PROPOSED PROJECT WOULD NOT EXPOSE SENSITIVE RECEPTORS TO SIGNIFICANT AIR POLLUTANT CONCENTRATIONS. [IMPACT AQ-4]

Impact Analysis:

2011 Approved Project

The SCAQMD's LST methodology was developed to ensure that a development project would not cause or contribute to an exceedance of the most stringent applicable federal or state AAQS or to an increase of PM emissions in excess of the control requirement in SCAQMD Rule 403.

Construction LSTs

The Certified EIR identified the Project Site to be larger than five acres and that the equipment list would allow for greater than five acres to be graded at one time. Dispersion modeling using the ISC3ST model was performed to determine maximum localized concentrations of CO, NO_x, PM_{10}, and $PM_{2.5}$ emissions at individual sensitive receptor locations nearest the 2011 approved Project Site boundaries. The results demonstrated that the 2011 Approved Project would not result in significant impacts on local air quality resulting from construction.

The Proposed Project encompasses a much smaller area than that identified in the Certified EIR. Therefore, construction emissions of the Proposed Project are compared to SCAQMD's LSTs and is shown in Table 5.2-9. The table shows the estimated Project-related regional emissions at which localized concentrations (ppm or $\mu g/m^3$) would exceed the AAQS according to the SRA, size of the project site, and distance to the nearest sensitive receptor. LST are based on the California AAQS, which are the most stringent AAQS that have been established to provide a margin of safety in the protection of the public health and welfare. They are designed to protect those sensitive receptors most susceptible to further respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Emissions generated by construction activities are anticipated to cause temporary increases in pollutant concentrations. Based on the equipment use projected during grading activities, the Project would disturb over 5 acres on a daily basis during the grading phase but would disturb less than 5-acres per day for all other construction phases. SCAQMD's LSTs are used as screening criteria to determine if dispersion modeling is warranted. Table 5.2-10 shows the maximum daily construction emissions (pounds per day) generated during construction activities compared with the SCAQMD's screening level LSTs.

Table 5.2-10
Construction Emissions Compared to SCAQMD's Screening-Level LSTs With Mitigation Measures included in the 2011 Approved Project

Source	Pollutants (lb/day)[1,2]			
	NO_x[2]	CO	PM_{10}	$PM_{2.5}$
Utility Trenching 2014				
Utility Trenching	8	12	<1	<1
SCAQMD Localized Significance Threshold	135	2,180	430	275
Exceeds Localized Significance Screening Criteria?	No	No	No	No
Grading and Overlap of Grading + Utility Trenching				
Fine Grading	44	56	6	4
Overlap (Trenching Utilities + Fine Grading)	52	68	6	4
SCAQMD Localized Significance Threshold	218	4,109	461	344
Exceeds Localized Significance Screening Criteria?	No	No	No	No
Building Construction				
Building Construction 2014	18	23	1	1
Building Construction 2015	18	23	1	1
SCAQMD Localized Significance Threshold	148	2464	436	285
Exceeds Localized Significance Screening Criteria?	No	No	No	No
Paving				
Asphalt Paving 2016	14	21	1	1
SCAQMD Localized Significance Threshold	132	2,180	430	275
Exceeds Localized Significance Screening Criteria?	No	No	No	No
Overlap of Building Construction + Coatings + Paving + Landscaping				
Architectural Coatings 2015	2	2	<1	<1
Overlap (Building Construction 2015 + Architectural Coatings 2015)	20	25	1	1
Building Construction 2016	18	23	1	1
Architectural Coatings 2016	2	2	<1	<1
Finishing/Landscaping 2016	15	23	1	1
Asphalt Paving 2016	14	21	1	1
Overlap (Building Construction 2016 + Architectural Coatings 2016 + Finishing/Landscaping 2016 + Paving 2016)	49	69	3	3
SCAQMD Localized Significance Threshold	148	2,464	436	285
Exceeds Localized Significance Screening Criteria?	No	No	No	No

Source: CalEEMod Version 2013.2., and SCAQMD, Localized Significance Methodology, 2006, October, Appendix A. Construction NO_X and CO LSTs are based on receptors within 600 feet (183 meters) In accordance with SCAQMD methodology, only on-site stationary sources and mobile equipment occurring on the project site are included in the analysis.

SCAQMD methodology, only on-site stationary sources and mobile equipment occurring on the project site are included in the analysis.

[1] LSTs are based on 1.00 acres disturbed per day

[2] LSTs are based on 5.0 acres disturbed per day.

[3] LSTs are based on 1.0 acres disturbed per day.

[3] Construction phasing is based on the preliminary information provided by the project applicant. Where specific information regarding project-related construction activities was not available, construction assumptions were based on CalEEMod defaults, which are based on construction surveys conducted by SCAQMD of construction equipment and phasing for comparable projects.

[4] Includes implementation of fugitive dust control measures required by SCAQMD under Rule 403 and 403.1, including watering disturbed areas a minimum of three times per day, reducing speed limit to 15 miles per hour on unpaved surfaces, replacing ground cover quickly, and street sweeping with Rule 1186-compliant sweepers. Modeling also assumes a VOC of 100 g/L pursuant to SCAQMD Rule 1113,use of Tier 3 equipment for all phases

As shown in Table 5.2-10, localized construction emissions would be less than SCAQMD's screening-level LSTs. Hence, localized emissions from construction activities related to the Proposed Project are less than significant.

Mitigation Program and Net Impact

The 2011 Approved Project identified localized construction emissions as less than significant. The Proposed Project would not result in any new impacts, or increase the severity of impacts, with respect to exposure of sensitive receptors to substantial pollutant concentrations from construction activities. No mitigation measures are introduced here in this DSEIR as impacts would be less than significant.

2012 Modified Project

Under the 2012 Modified Project, the Project Site is designated a 2,600-student high school. The Proposed Project would be compatible with the uses proposed under the 2012 Modified Project and the overall construction emissions impacts analysis of the Proposed Project would be generally the same as the analysis for the 2011 Approved Project.

Mitigation Program and Net Impact

No mitigation measures are introduced here in this DSEIR as net impacts would be less than significant.

IMPACT 5.2-5: AS COMPARED TO THE 2011 APPROVED PROJECT, OPERATION OF THE PROPOSED PROJECT WOULD NOT EXPOSE SENSITIVE RECEPTORS TO ELEVATED CONCENTRATIONS OF CO AT INTERSECTIONS. [IMPACT AQ-4]

Impact Analysis:

2011 Approved Project

SCAQMD has adopted localized significance thresholds for onsite emissions. However, consistent with the 2011 Approved Project, the Proposed Project does not fall under land uses, such as industrial, manufacturing, and warehousing, that require a localized significant threshold analysis for operational emissions to be performed under SCAQMD's LST methodology.

Areas of vehicle congestion have the potential to create pockets of CO called hot spots. These pockets have the potential to exceed the state one-hour standard of 20 parts per million (ppm) or the eight-hour standard of 9.0 ppm. Because CO is produced in greatest quantities from vehicle combustion and does not readily disperse into the atmosphere, adherence to AAQS is typically demonstrated through an analysis of localized CO concentrations. Hot spots are typically produced at intersections, where traffic congestion is highest because vehicles queue for longer periods and are subject to reduced speeds.

The SoCAB has been designated as attainment under both the national and California AAQS for CO. Under existing and future vehicle emission rates, a project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour—or 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited—in order to generate a significant CO impact (BAAQMD Program). The Proposed Project would not generate this quantity of vehicles; and therefore,

would not have the potential to substantially increase CO hotspots at intersections in the vicinity of the site.

Mitigation Program and Net Impact

With regard to CEQA Section 21166 and CEQA Guidelines Section 15162(a), the changes due to the Proposed Project would not result in any new impacts, or increase the severity of impacts, with respect to exposure of sensitive receptors to substantial pollutant concentrations. Localized air quality impacts related to mobile-source emissions would be less than significant. Therefore, operation of the Proposed Project, like the operation of the 2011 Approved project, would not have a significant impact related to elevated concentrations of CO at intersections and no mitigation measures are introduced here in this DSEIR as net impacts would be less than significant.

2012 Modified Project

Under the 2012 Modified Project, the Project Site is designated as a 2,600-student high school. The Proposed Project would be compatible with the uses proposed under the 2012 Modified Project and the overall operational emissions impacts of the Proposed Project would be the same as the analysis for the 2011 Approved Project.

Mitigation Program and Net Impact

No mitigation measures are introduced here in this DSEIR as net impacts would be less than significant.

5.2.6 Cumulative Impacts

In accordance with the SCAQMD's *CEQA Air Quality Analysis Handbook*, any project that produces a significant project-level regional air quality impact in an area that is in nonattainment adds to the cumulative impact. Cumulative projects within the local area include build out consistent with the City of Irvine General Plan, projects under construction, and approved projects (refer to Chapter 4, *Environmental Setting*). The greatest source of emissions within the SoCAB is from mobile sources. Due to the extent of the area potentially impacted from cumulative project emissions, the SCAQMD considers a project cumulatively significant when project-related emissions exceed the SCAQMD regional emission thresholds shown above in 5.2-8.

Construction

The SoCAB is designated nonattainment for O_3, PM_{10}[3], $PM_{2.5}$, and lead (Los Angeles County only) under the California and national AAQS, and nonattainment for NO_2under the California AAQS. Construction of cumulative projects will further degrade the regional air quality. Already-imposed mitigation measures from the Certified EIR and associated MMRP, as well as PPPs and PDFs specified for the Proposed Project will assist in mitigating these cumulative impacts and PPPs can be applied to all similar cumulative projects. Even with the implementation of mitigation measures, PPPs, and PDFs, the Proposed Project's construction emissions would still exceed the SCAQMD significance thresholds for VOC.

[3] CARB approved the SCAQMD's request to redesignate the SoCAB from serious nonattainment for PM_{10} to attainment for PM_{10} under the National AAQS on March 25, 2010 because the SoCAB did not violated federal 24-hour PM_{10} standards during the period from 2004 to 2007. However, the USEPA has not yet approved this request.

However, the Proposed Project's contribution to cumulative air quality impacts would be less than significant with additional mitigation.

Operation

For operational air quality emissions, any project that does not exceed or can be mitigated to less than the daily regional threshold values is not considered by the SCAQMD to be a substantial source of air pollution and does not add significantly to a cumulative impact. As discussed above, operation of both the 2011 Approved Project and the Proposed Project would result in emissions in excess of the SCAQMD regional daily emissions thresholds. Therefore, both the 2011 Approved Project's and the Proposed Project's contribution to cumulative operational air quality impacts would be significant.

5.2.7 Level of Significance Before Mitigation

Upon implementation of regulatory requirements and PPPs, Impacts 5.2-1, 5.2-4, and 5.2-5 would result in less than significant impact without mitigation.

5.2.8 Applicable Mitigation Measures from the 2011 Approved Project and 2012 Modified Project

The Mitigation Agreement between the District and Heritage Fields provides for the site to be delivered to the District in a super pad condition, mass-graded and compacted, with backbone infrastructure installed (roadway, storm drains, sanitary sewer, water, etc.) and stubbed wet and dry utilities. The following mitigation measures are applicable to the community developer and not directly to the District.

Construction Phase

AQ-1 Prior to the start of demolition and construction within the project area, adjacent sensitive receptors shall be informed of the planned demolition and construction activities. Measures to avoid significantly impacting these receptors shall be developed and implemented by the project proponent in coordination with these uses. Other applicable mitigation measures such as erection of fences around construction areas; staggered use of equipment near sensitive receptors; diversion of truck trips away from receptors; etc.; shall be employed as necessary. Compliance with this measure shall be verified by the Director of Community Development.

Use coatings and solvents with a volatile organic compound (VOC) content lower than required under SCAQMD Rule 1113 (i.e., Super Compliant Paints). All architectural coatings shall be applied either by (1) using a high-volume, low-pressure spray method operated at an air pressure between 0.1 and 10 pounds per square inch gauge to achieve a 65 percent application efficiency; or (2) manual application using a paintbrush, hand-roller, trowel, spatula, dauber, rag, or sponge, to achieve a 100 percent applicant efficiency. The construction contractor shall also use pre-coated/natural colored building, where feasible. Use of low-VOC paints and spray method shall be included as a note on architectural building plans.

AQ-2 Prior to the commencement of construction activities required to demolish and/or remove existing DON structures, including runways, the Director of Community Development shall receive and approve a construction emissions mitigation plan from the chosen demolition

contractor. Prior to the issuance of grading permits, the applicant of any future development project shall submit, and the Director of Community Development shall approve a construction emissions mitigation plan. The plan shall identify implementation procedures for each of the following emissions reduction measures and all feasible mitigation measures shall be implemented. If certain measures are determined infeasible, an explanation thereof shall be provided.

- Utilize off-road construction equipment that conforms to Tier 3 of the United States Environmental Protection Agency, or higher emissions standards for construction equipment over 50 horsepower that are commercially available. The construction contractor shall be made aware of this requirement prior to the start of construction activities. Use of commercially available Tier 3 or higher off-road equipment, which is:

    - Year 2006 or newer construction equipment for engines rated equal to 175 horsepower (hp) and greater;

    - Year 2007 and newer construction equipment for engines rated equal to 100 hp but less than 175 hp; and

    - Year 2008 and newer construction equipment for engines rated equal to or greater than 50 hp but less than 100 hp.

  The requirement to use such equipment shall be stated on all grading plans. The construction contractor shall maintain a list of all operating equipment in use on the project site. The construction equipment list shall state the makes, models, and numbers of construction equipment on-site.

- Water exposed soils at least three times daily and maintain equipment and vehicle engines in good condition and in proper tune.

- Wash off trucks leaving the site.

- Replace ground cover on construction sites when it is determined that the site will be undisturbed for lengthy periods.

- Reduce speeds on unpaved roads to less than 15 miles per hour.

- Halt all grading and excavation operations when wind speeds exceed 25 miles per hour.

- Suspend all emission generating activities during smog alerts.

- Use propane- or butane-powered on-site mobile equipment instead of diesel/gasoline, whenever feasible.

- Properly maintain diesel-powered on-site mobile equipment.

- Prohibit nonessential idling of construction equipment to five minutes or less in compliance with California Air Resources Board's Rule 2449.
- Sweep streets with SCAQMD Rule 1186 compliant PM_{10}-efficient vacuum units at the end of the day if substantial visible soil material is carried over to the adjacent streets.
- Use electricity from power poles rather than temporary on-site diesel- or gasoline-powered generators, whenever feasible.
- Use of low-VOC asphalt.
- Maintain a minimum 24-inch freeboard on trucks hauling dirt, sand, soil, or other loose materials and tarp materials with a fabric cover or other suitable means.
- Provide temporary traffic controls (e.g., flag persons) during all phases of construction to ensure minimum disruption of traffic.
- Schedule construction activities that affect traffic flow on adjoining streets to off-peak hours to the extent possible.
- Reroute construction trucks away from congested streets, whenever feasible.
- Provide dedicated turn lanes for movement of construction trucks and equipment on- and off-site, whenever feasible.

Operational Phase

AQ-3 Prior to the issuance of building permits for any future development, the applicant shall submit, and Director of Community Development shall have approved, an operation-emissions mitigation plan. The plan shall identify implementation procedures for each of the following emissions reduction measures and all feasible mitigation measures shall be implemented. If certain measures are determined infeasible, an explanation thereof shall be provided.

- Utilize built-in energy-efficient appliances to reduce energy consumption and emissions.
- Utilize energy-efficient and automated controls for air conditioners and lighting to reduce electricity consumption and associated emissions.
- Install special sunlight-filtering window coatings or double-paned windows to reduce thermal loss, whenever feasible.
- Utilize light-colored roofing materials as opposed to dark roofing materials to conserve electrical energy for air-conditioning.

- Provide shade trees in residential subdivisions as well as public areas, including parks, to reduce building heating and cooling needs, whenever feasible.
- Ensure that whenever feasible, commercial truck traffic is diverted from local roadways to off-peak periods.
- Centralize space heating and cooling for multiple-family dwelling units and commercial space.
- Orient buildings north/south for reducing energy-related combustion emissions.
- Use solar energy, when feasible.
- Use high rating insulation in walls and ceilings.

AQ-5 Prior to the issuance of building permits, the applicant shall demonstrate to the satisfaction of the Director of Community Development that future employment generating nonresidential development shall include measures to reduce vehicle trips including: the promotion of carpool incentives and alternative work schedules, easy access to public transit systems, trail linkages between uses, low emissions vehicles fleets, and the provision of on-site facilities such as banking and food courts, and bicycle parking facilities, and other transportation demand management measures, as deemed appropriate.

2012 Modified Project

Same as the 2011 Approved Project.

5.2.9 Additional Mitigation Measures for the High School No. 5

Impact 5.2-2

For the Proposed Project, mitigation measures are required to reduce criteria air pollutant emissions from construction activities to under regional SCAQMD and modified mitigation measures from the above applicable mitigation measures from the Certified EIR are listed below:

AQ-1 Prior to construction contract award, the Irvine United School District shall specify in the construction bid that the construction contractor shall use interior and exterior paints and primers with a volatile organic compound (VOC) content of 30 grams per liter (g/L) or less in order to minimize VOC emissions from painting. Use of low VOC interior and exterior paints and primers (e.g., water-based) shall be noted on building plans.

Use coatings and solvents with a volatile organic compound (VOC) content lower than required under SCAQMD Rule 1113 (i.e., Super Compliant Paints). All architectural coatings shall be applied either by (1) using a high-volume, low-pressure spray method operated at an air pressure between 0.1 and 10 pounds per square inch gauge to achieve a 65 percent application efficiency; or (2) manual application using a paintbrush, hand-roller, trowel, spatula, dauber, rag, or sponge, to achieve a 100 percent applicant efficiency. The construction contractor shall also use pre-coated/natural colored building, where feasible. Use

of low-VOC paints and spray method shall be included as a note on architectural building plans.

AQ-2 Prior to construction contract award, the Irvine United School District shall specify in the construction bid that the construction contractor shall take the following measures:

- Utilize off-road construction equipment that conforms to Tier 3 of the United States Environmental Protection Agency, or higher emissions standards for construction equipment over 50 horsepower that are commercially available. The construction contractor shall be made aware of this requirement prior to the start of construction activities. Use of commercially available Tier 3 or higher off-road equipment, which is:

    - Year 2006 or newer construction equipment for engines rated equal to 175 horsepower (hp) and greater;

    - Year 2007 and newer construction equipment for engines rated equal to 100 hp but less than 175 hp; and

    - Year 2008 and newer construction equipment for engines rated equal to or greater than 50 hp but less than 100 hp.

  The requirement to use such equipment shall be stated on all grading plans. The construction contractor shall maintain a list of all operating equipment in use on the project site. The construction equipment list shall state the makes, models, and numbers of construction equipment on-site.

- Water exposed soils at least three times daily and maintain equipment and vehicle engines in good condition and in proper tune.

- Wash off trucks leaving the site.

- Replace ground cover on construction sites when it is determined that the site will be undisturbed for lengthy periods.

- Reduce speeds on unpaved roads to less than 15 miles per hour.

- Halt all grading and excavation operations when wind speeds exceed 25 miles per hour.

- Suspend all emission generating activities during smog alerts.

- Use propane- or butane-powered on-site mobile equipment instead of diesel/gasoline, whenever feasible.

- Properly maintain diesel-powered on-site mobile equipment.

- Prohibit nonessential idling of construction equipment to five minutes or less in compliance with California Air Resources Board's Rule 2449.
- Sweep streets with SCAQMD Rule 1186 compliant PM10-efficient vacuum units at the end of the day if substantial visible soil material is carried over to the adjacent streets.
- Use electricity from power poles rather than temporary on-site diesel- or gasoline-powered generators, whenever feasible.
- Use of low-VOC asphalt.
- Maintain a minimum 24-inch freeboard on trucks hauling dirt, sand, soil, or other loose materials and tarp materials with a fabric cover or other suitable means.
- Provide temporary traffic controls (e.g., flag persons) during all phases of construction to ensure minimum disruption of traffic.
- Schedule construction activities that affect traffic flow on adjoining streets to off-peak hours to the extent possible.
- Reroute construction trucks away from congested streets, whenever feasible.
- Provide dedicated turn lanes for movement of construction trucks and equipment on- and off-site, whenever feasible.

Impact 5.2-3

Operational Phase

AQ-3 Prior to initiation of construction, the Irvine Unified School District shall have approved an operation-emissions mitigation plan. The plan shall identify implementation procedures for each of the following emissions reduction measures and all feasible mitigation measures shall be implemented. If certain measures are determined infeasible, an explanation thereof shall be provided.

- Utilize built-in energy-efficient appliances to reduce energy consumption and emissions.
- Utilize energy-efficient and automated controls for air conditioners and lighting to reduce electricity consumption and associated emissions.
- Install special sunlight-filtering window coatings or double-paned windows to reduce thermal loss, whenever feasible.
- Utilize light-colored roofing materials as opposed to dark roofing materials to conserve electrical energy for air-conditioning.

- Ensure that whenever feasible, truck traffic is diverted from local roadways to off-peak periods.
- Centralize space heating and cooling for multiple-family dwelling units and commercial space.
- Use solar energy, when feasible.
- Use high rating insulation in walls and ceilings.

AQ-4 The District shall implement an employee commute trip reduction plan to reduce vehicle trips including: the promotion of carpool incentives and alternative work schedules, easy access to public transit systems, trail linkages between uses, low emissions vehicles fleets, and the provision of on-site facilities such as bicycle parking facilities.

5.2.10 Level of Significance After Additional Mitigation

Impact 5.2-2

Like the 2011 Approved Project, the Proposed Project would result in significant short-term construction air quality impacts due to emissions of VOC at levels above the applicable thresholds. PPPs 2-1 through 2-4 and Mitigation Measures AQ-2 would reduce construction emissions to the extent feasible. Mitigation Measure AQ-1 would require the District to use paints with a VOC content of 30 g/L or less to reduce VOC emissions below SCAQMD's mass emissions threshold. Table 5.2-11 shows emissions with implementation of Mitigation Measure AQ-1. With implementation AQ-1, Impact 5.2-2 would be less than significant.

Table 5.2-11
Maximum Daily Construction Regional Emissions
With Additional Mitigation Measures

Construction Phase	Criteria Air Pollutant Emissions (lbs/day)[1,2]					
	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Site Preparation Phases						
Trenching Utilities	1	8	13	<1	1	<1
Fine Grading	3	45	59	<1	9	4
Overlap (Trenching Utilities + Fine Grading)	4	52	74	<1	9	4
Building Construction 2014	13	37	67	<1	6	3
Building Construction 2015	12	35	63	<1	6	3
Building Construction 2016	11	33	60	<1	6	2
Architectural Coatings 2015	48	2	7	<1	1	<1
Architectural Coatings 2016	48	2	6	<1	1	<1
Finishing/Landscaping 2016	11	30	59	<1	6	2
Paving	2	17	26	<1	1	<1
Overlap (Building Construction 2015 + Architectural Coatings 2015)	60	37	70	<1	7	3
Overlap (Building Construction 2016 + Architectural Coatings 2016 + Finishing/Landscaping 2016 + Paving 2016)	72	82	151	<1	14	4
Maximum Daily Construction Emissions	72[3]	82[3]	151[3]	<1[3]	14[4]	4[3]
SCAQMD Regional Significance Threshold	75	100	550	150	150	55
Exceeds Significance Threshold?	No	No	No	No	No	No

Source: CalEEMod Version Program.1.1.
Notes: Totals may not total to 100 percent due to rounding.
[1] Construction phasing is based on the preliminary information provided by the project applicant. Where specific information regarding project-related construction activities was not available, construction assumptions were based on CalEEMod defaults, which are based on construction surveys conducted by SCAQMD of construction equipment and phasing for comparable projects.
[2] Includes implementation of fugitive dust control measures required by SCAQMD under Rule 403, including watering disturbed areas a minimum of three times per day, reducing speed limit to 15 miles per hour on unpaved surfaces, replacing ground cover quickly, and street sweeping with Rule 1186-compliant sweepers. Modeling also assumes a VOC of 100 g/L for interior paints pursuant to SCAQMD Rule 1113, use of Tier-3 equipment, use of low VOC paints with VOC content not exceeding 30 g/l for interior and exterior painting during the architectural coatings phase (modified Mitigation Measure AQ-6)
[3] From Overlap of Building Construction, Architectural Coatings, Finishing/Landscaping and Paving phases [2016]
[4] From Overlap of Utility Trenching and Fine Grading phases.

Impact 5.2-3

Like the 2011 Approved Project, long-term operation of the Proposed Project would result in significant and unavoidable impacts due to emissions of VOC. Mitigation Measures AQ-3 through AQ-4 would reduce operational phase air quality impacts to the extent feasible. However, like the 2011 Approved Project, Impact 5.2-3 would remain significant and unavoidable even after mitigation.

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