5.2 AIR QUALITY

This chapter includes an evaluation of the potential environmental consequences associated with the construction and operation of the proposed project that are related to air quality. Additionally, this chapter describes the environmental setting, including regulatory framework and the existing air quality setting and baseline conditions, and identifies mitigation measures, if required, that would avoid or reduce significant impacts. The analysis is based in part on:

Air Quality and Greenhouse Gas Emissions Analysis Technical Report for the Solana Torrance Project, Dudek, March 2019 (included as Appendix B of this Draft EIR).

Fifty-two comments relating to air quality were received in response to the Initial Study (IS)/Notice of Preparation (NOP) circulated for the proposed project, primarily regarding the potential impacts that the pollutant emissions relating to construction activities, including the release of fugitive dust including diatomaceous earth, would have on the neighboring community. Concerns were also received regarding the emissions from operation of the proposed project, including new vehicle trips. The potential impacts of the construction and operation of the new development and its new sources of criteria pollutant emissions have been analyzed in this section.

5.2.1 Environmental Setting

5.2.1.1 REGULATORY BACKGROUND

Federal, state, and local laws, regulations, plans, or guidelines that are related to protection and preservation of air quality and applicable to the proposed project are summarized below.

Federal Regulations

Criteria Air Pollutants

The federal Clean Air Act, passed in 1970 and last amended in 1990, forms the basis for the national air pollution control effort. The United States Environmental Protection Agency (EPA) is responsible for implementing most aspects of the Clean Air Act, including setting National Ambient Air Quality Standards (NAAQS) for major air pollutants; setting hazardous air pollutant (HAP) standards; approving state attainment plans; setting motor vehicle emission standards; issuing stationary source emission standards and permits; and establishing acid rain control measures, stratospheric ozone (O_3) protection measures, and enforcement provisions. Under the Clean Air Act, NAAQS are established for the following criteria pollutants: O_3, CO (carbon monoxide), NO_2 (nitrogen dioxide), SO_2 (sulfur dioxide), PM_{10} (coarse particulates), $PM_{2.5}$ (fine particulates), and lead.

The NAAQS describe acceptable air quality conditions designed to protect the health and welfare of the citizens of the nation. The NAAQS (other than for O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. NAAQS for O_3, CO, NO_2, SO_2, PM_{10}, and $PM_{2.5}$ are based on statistical calculations over one- to three-year periods, depending on the pollutant. The Clean Air Act requires the EPA to reassess the NAAQS at least every five years to determine whether adopted standards are adequate to protect public health based on current scientific evidence. States with areas that exceed the NAAQS must prepare a state implementation plan that demonstrates how those areas will attain the standards within mandated time frames.

Hazardous Air Pollutants

The 1977 federal Clean Air Act amendments required the EPA to identify national emission standards for HAPs to protect public health and welfare. HAPs include certain volatile organic chemicals, pesticides, herbicides, and radionuclides that present a tangible hazard based on scientific studies of exposure to humans and other mammals. Under the 1990 federal Clean Air Act Amendments, which expanded the control program for HAPs, 189 substances and chemical families were identified as HAPs.

State Regulations

Criteria Air Pollutants

The federal Clean Air Act delegates the regulation of air pollution control and the enforcement of the NAAQS to the states. In California, the task of air quality management and regulation has been legislatively granted to the California Air Resources Board (CARB), with subsidiary responsibilities assigned to air quality management districts and air pollution control districts at the regional and county levels. CARB, which became part of the California Environmental Protection Agency in 1991, is responsible for ensuring implementation of the California Clean Air Act of 1988, responding to the federal Clean Air Act, and regulating emissions from motor vehicles and consumer products.

The CARB has established California Ambient Air Quality Standards (CAAQS), which are generally more restrictive than the NAAQS. The CAAQS describe adverse conditions; that is, pollution levels must be below these standards before a basin can attain the standard. Air quality is considered "in attainment" if pollutant levels are continuously below the CAAQS and violate the standards no more than once each year. The CAAQS for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, PM_{10}, $PM_{2.5}$, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. The NAAQS and CAAQS are presented in Table 5.2-1, *Ambient Air Quality Standards for Criteria Pollutants*.

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Table 5.2-1 Ambient Air Quality Standards for Criteria Pollutants

Pollutant	Averaging Time	California Standards[1] Concentration[3]	National Standards[2] Primary[3,4]	National Standards[2] Secondary[3,5]
O_3	1 hour	0.09 ppm (180 μg/m³)	—	Same as primary standard[6]
	8 hours	0.070 ppm (137 μg/m³)	0.070 ppm (137 μg/m³)[6]	
NO_2[7]	1 hour	0.18 ppm (339 μg/m³)	0.100 ppm (188 μg/m³)	Same as primary standard
	Annual arithmetic mean	0.030 ppm (57 μg/m³)	0.053 ppm (100 μg/m³)	
CO	1 hour	20 ppm (23 mg/m³)	35 ppm (40 mg/m³)	None
	8 hours	9.0 ppm (10 mg/m³)	9 ppm (10 mg/m³)	
SO_2[8]	1 hour	0.25 ppm (655 μg/m³)	0.075 ppm (196 μg/m³)	—
	3 hours	—	—	0.5 ppm (1,300 μg/m³)
	24 hours	0.04 ppm (105 μg/m³)	0.14 ppm (for certain areas)[7]	—
	Annual	—	0.030 ppm (for certain areas)[7]	—
PM_{10}[9]	24 hours	50 μg/m³	150 μg/m³	Same as primary standard
	Annual arithmetic mean	20 μg/m³	—	
$PM_{2.5}$[9]	24 hours	—	35 μg/m³	Same as primary standard
	Annual arithmetic mean	12 μg/m³	12.0 μg/m³	15.0 μg/m³
Lead[10,11]	30-day average	1.5 μg/m³	—	—
	Calendar quarter	—	1.5 μg/m³ (for certain areas)[11]	Same as primary standard
	Rolling 3-month average	—	0.15 μg/m³	
Hydrogen sulfide	1 hour	0.03 ppm (42 μg/m³)	—	—
Vinyl chloride[10]	24 hours	0.01 ppm (26 μg/m³)	—	—
Sulfates	24- hours	25 μg/m³	—	—
Visibility reducing particles	8 hours (10:00 a.m. to 6:00 p.m. PST)	Insufficient amount to produce an extinction coefficient of 0.23 per kilometer due to the number of particles when the relative humidity is less than 70 percent	—	—

Source: Appendix B.
Notes: O_3 = ozone; ppm = parts per million by volume; μg/m³ = micrograms per cubic meter; NO_2 = nitrogen dioxide; CO = carbon monoxide; mg/m³= milligrams per cubic meter; SO_2 = sulfur dioxide; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; PST = Pacific Standard Time.

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1 California standards for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, suspended particulate matter (PM_{10}, $PM_{2.5}$), and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2 National standards (other than O_3, NO_2, SO_2, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once per year. The O_3 standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than 1. For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

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

4 National primary standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

5 National secondary standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

6 On October 1, 2015, the national 8-hour O_3 primary and secondary standards were lowered from 0.075 to 0.070 ppm.

7 To attain the national 1-hour standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 parts per billion (ppb). Note that the national 1-hour standard is in units of ppb. California standards are in units of ppm. To directly compare the national 1-hour standard to the California standards, the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

8 On June 2, 2010, a new 1-hour SO_2 standard was established, and the existing 24-hour and annual primary standards were revoked. To attain the national 1-hour standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until 1 year after an area is designated for the 2010 standard, except that in areas designated nonattainment of the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

9 On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM_{10} standards (primary and secondary) of 150 $\mu g/m^3$ were also retained. The form of the annual primary and secondary standards is the annual mean averaged over 3 years.

10 CARB has identified lead and vinyl chloride as TACs with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

11 The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

Toxic Air Contaminants

The state Air Toxics Program was established in 1983 under AB 1807 (Tanner). The California toxic air contaminants (TACs) list identifies more than 700 pollutants, of which carcinogenic and noncarcinogenic toxicity criteria have been established for a subset of these pollutants pursuant to the California Health and Safety Code. In accordance with AB 2728, the state list includes the (federal) HAPs. In 1987, the Legislature enacted the Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588) to address public concern over the release of TACs into the atmosphere. AB 2588 law requires facilities emitting toxic substances to provide local air pollution control districts with information that will allow an assessment of the air toxics problem, identification of air toxics emissions sources, location of resulting hotspots, notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public over five years. TAC emissions from individual facilities are quantified and prioritized. "High-priority" facilities are required to perform a health risk assessment (HRA), and if specific thresholds are exceeded, the facility operator is required to communicate the results to the public in the form of notices and public meetings.

In 2000, CARB approved a comprehensive diesel risk reduction plan to reduce diesel emissions from both new and existing diesel-fueled vehicles and engines (CARB 2000). The regulation is anticipated to result in an 80 percent decrease in statewide diesel health risk in 2020 compared with the diesel risk in 2000. Additional regulations apply to new trucks and diesel fuel, including the On-Road Heavy Duty Diesel Vehicle (In-Use) Regulation, the On-Road Heavy Duty (New) Vehicle Program, the In-Use Off-Road Diesel Vehicle Regulation, and the New Off-Road Compression-Ignition (Diesel) Engines and Equipment program. These regulations and programs have timetables with which manufacturers must comply and according to which existing operators must upgrade their diesel- powered equipment. There are several Airborne Toxic Control Measures that reduce diesel emissions, including In-Use Off-Road Diesel-Fueled Fleets (13 CCR 2449 et seq.) and In-Use On-Road Diesel-Fueled Vehicles (13 CCR 2025).

California Health and Safety Code Section 41700

This section of the Health and Safety Code states that a person shall not discharge from any source whatsoever 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 of those persons or the public; or that cause, or have a natural tendency to cause, injury or damage to business or property. This section also applies to sources of objectionable odors.

Local Regulations

South Coast Air Quality Management District

The South Coast Air Quality Management District (SCAQMD) is the regional agency responsible for the regulation and enforcement of federal, state, and local air pollution control regulations in the South Coast Air Basin (SoCAB), where the project site is located. The SCAQMD operates monitoring stations in the SoCAB, develops rules and regulations for stationary sources and equipment, prepares emissions inventory and air quality management planning documents, and conducts source testing and inspections. The SCAQMD's air quality management plans (AQMPs) include control measures and strategies to be implemented to attain state and federal ambient air quality standards in the SoCAB. The SCAQMD then implements these control measures as regulations to control or reduce criteria pollutant emissions from stationary sources or equipment.

The most recent adopted AQMP is the 2016 AQMP, which was adopted by the SCAQMD governing board on March 3, 2017. The 2016 AQMP is a regional blueprint for achieving air quality standards and healthful air. The 2016 AQMP represents a new approach, focusing on available, proven, and cost-effective alternatives to traditional strategies, while seeking to achieve multiple goals in partnership with other entities promoting reductions in greenhouse gases (GHGs) and toxic risk, as well as efficiencies in energy use, transportation, and goods movement (SCAQMD 2017). Because mobile sources are the principal contributor to the SoCAB's air quality challenges, SCAQMD has been and will continue to be closely engaged with CARB and the EPA, who have primary responsibility for these sources.

Applicable Rules

Emissions that would result from mobile, area, and stationary sources during construction and operation of the project are subject to the rules and regulations of SCAQMD. The SCAQMD rules applicable to the project may include:

- **Rule 401, Visible Emissions.** This rule establishes the limit for visible emissions from stationary sources.
- **Rule 402, Nuisance.** This rule prohibits the discharge of air pollutants from a facility that cause injury, detriment, nuisance, or annoyance to the public or damage to business or property.
- **Rule 403, Fugitive Dust.** This rule requires fugitive dust sources to implement best available control measures for all sources and prohibits all forms of visible particulate matter from crossing any property

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line. SCAQMD Rule 403 is intended to reduce PM_{10} emissions from any transportation, handling, construction, or storage activity that has the potential to generate fugitive dust.

- **Rule 431.2, Sulfur Content of Liquid Fuels.** The purpose of this rule is to limit the sulfur content in diesel and other liquid fuels for the purpose of reducing the formation of SO_X and particulates during combustion and of enabling the use of add-on control devices for diesel- fueled internal combustion engines. The rule applies to all refiners, importers, and other fuel suppliers such as distributors, marketers, and retailers, as well as to users of diesel, low-sulfur diesel, and other liquid fuels for stationary-source applications in the SCAQMD. The rule also affects diesel fuel supplied for mobile sources.
- **Rule 1110.2, Emissions from Gaseous- and Liquid-Fueled Engines.** This rule applies to stationary and portable engines rated at greater than 50 horsepower. The purpose of Rule 1110.2 is to reduce NO_X, volatile organic compounds (VOC), and CO emissions from engines. Emergency engines, including those powering standby generators, are generally exempt from the emissions and monitoring requirements of this rule because they have permit conditions that limit operation to 200 hours or less per year as determined by an elapsed operating time meter.
- **Rule 1113, Architectural Coatings.** This rule requires manufacturers, distributors, and end users of architectural and industrial maintenance coatings to reduce VOC emissions from the use of these coatings, primarily by placing limits on the VOC content of various coating categories.

Southern California Association of Governments

The Southern California Association of Governments (SCAG) is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial counties and serves as a forum for regional issues relating to transportation, the economy, community development, and the environment. SCAG serves as the federally designated metropolitan planning organization for the Southern California region and is the largest metropolitan planning organization in the United States.

On April 7, 2016, SCAG's Regional Council adopted the 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy (2016 RTP/SCS). The 2016 RTP/SCS is a long-range visioning plan that balances future mobility and housing needs with economic, environmental, and public health goals. The 2016 RTP/SCS charts a course for closely integrating land use and transportation so that the region can grow smartly and sustainably. In June 2016, SCAG received its conformity determination from the Federal Highway Administration and the Federal Transit Administration indicating that all air quality conformity requirements for the 2016 RTP/SCS and associated 2015 Federal Transportation Improvement Program Consistency Amendment through Amendment 15- 12 had been met (SCAG 2016). The SCAQMD 2016 AQMP applies the updated SCAG growth forecasts assumed in the 2016 RTP/SCS.

City of Torrance

The City's General Plan (2010) includes various goals and policies designed to help improve air quality in the City. In order to reduce mobile source emissions, the City has adopted a Trip Reduction Ordinance (Municipal Code Division 9 Chapter 10) to incentivize walking, cycling, use of public transit, and carpooling to work. Energy efficiency in buildings is addressed under energy conservation and sustainable building practice topics in the General Plan update. Trip reduction strategies are addressed in the land use and circulation elements. The land use element includes policies to encourage site design that is conducive to walking. To reduce vehicle traffic and congestion in Torrance, the circulation element includes policies to encourage the use of alternative forms of transportation and strategies to be implemented by employers, developers, and merchants. Transportation demand management strategies include promoting the use of carpools, vanpools, work-related transit use, bicycling, and walking as a means to improve air quality and to minimize congestion on the local and regional network.

As discussed in the General Plan, policies pertaining to improving air quality are addressed in multiple chapters of the General Plan. Objective CR.13 and associated policies are presented below (Torrance 2010).

- **OBJECTIVE CR.13:** To contribute to the improvement of local and regional ambient air quality to benefit the health of all.
  - **Policy CR.13.1:** Continue to participate in the efforts of the CARB and the SCAQMD to meet State and federal air quality standards.
  - **Policy CR.13.2:** Work with neighboring cities to implement local and regional projects that improve mobility on freeways and railways, reduce emissions, and improve air quality.
  - **Policy CR.13.3:** Support regional air quality goals through conscientious land use and transportation planning and the implementation of resource conservation measures.
  - **Policy CR.13.4:** Balance the achievement of clean air with other major goals of the City.
  - **Policy CR.13.5:** Support air quality and energy and resource conservation by encouraging alternative modes of transportation such as walking, bicycling, transit, and carpooling.
  - **Policy CR.13.6:** Promote citizen awareness and participation in programs to reduce air pollution and traffic congestion.
  - **Policy CR.13.7:** Encourage the use of alternative fuel vehicles and re-refined oil.
  - **Policy CR.13.8:** Promote energy-efficient building construction and operation practices that reduce emissions and improve air quality.

Many air quality strategies result in co-benefits by reducing GHG emissions and vice versa.[1]

5.2.1.2 EXISTING CONDITIONS

The project site is within the SoCAB, a 6,745-square-mile area bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east.

Meteorological and Topographical Conditions

The primary factors that determine air quality are the locations of air pollutant sources and the amount of pollutants emitted. Meteorological and topographical conditions, however, are also important. Factors such as wind speed and direction, air temperature gradients and sunlight, and precipitation and humidity interact with physical landscape features to determine the movement and dispersal of air pollutants. The SoCAB's air pollution problems are a consequence of the combination of emissions from the nation's second largest urban

[1] See Section 5.6, *Greenhouse Gas Emissions,* of this EIR for a discussion of the City's GHG emissions reduction policies.

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area, meteorological conditions adverse to the dispersion of those emissions, and mountainous terrain surrounding the SoCAB that traps pollutants as they are pushed inland with the sea breeze (SCAQMD 2017). Meteorological and topographical factors that affect air quality in the SoCAB are described below.[2]

Climate

The SoCAB is characterized as having a Mediterranean climate (typified as semiarid with mild winters, warm summers, and moderate rainfall). The general region lies in the semipermanent high-pressure zone of the eastern Pacific; as a result, the climate is mild and tempered by cool sea breezes. The usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds. The extent and severity of the air pollution problem in the SoCAB is a function of the area's natural physical characteristics (e.g., weather and topography) and of manufactured influences (e.g., development patterns and lifestyle). Moderate temperatures, comfortable humidity, and limited precipitation characterize the climate in the SoCAB. The average annual temperature varies little, averaging 75°F. However, with a less-pronounced oceanic influence, the eastern inland portions of the SoCAB show greater variability in annual minimum and maximum temperatures. All portions of the SoCAB have recorded temperatures over 100°F in recent years. Although the SoCAB has a semiarid climate, the air near the surface is moist because of the presence of a shallow marine layer. Except for infrequent periods when dry air is brought into the SoCAB by offshore winds, the ocean effect is dominant. Periods with heavy fog are frequent, and low stratus clouds are a characteristic climate feature. Annual average relative humidity is 70 percent at the coast and 57 percent in the eastern part of the SoCAB. Precipitation in the SoCAB is typically 9 to 14 inches annually and is rarely in the form of snow or hail because of typically warm weather. The frequency and amount of rainfall is greater in the coastal areas.

The average low in Torrance is reported at 44.2°F in January, and the average high is 78.6°F in August (Torrance 2009). In contrast to a very steady pattern of temperature, rainfall is seasonally and annually highly variable. Almost all rain falls from November to 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 13.58 inches per year (Torrance 2009).

Sunlight

The presence and intensity of sunlight are necessary prerequisites for the formation of photochemical smog. Under the influence of the ultraviolet radiation of sunlight, certain "primary" pollutants (mainly reactive hydrocarbons and oxides of nitrogen [NO_X][3]) react to form "secondary" pollutants (primarily oxidants). Since this process is time dependent, secondary pollutants can be formed many miles downwind of the emission sources. Southern California has abundant sunshine that drives the photochemical formation of ozone (O_3) and a substantial portion of fine particulate matter ($PM_{2.5}$; particulate matter with an aerodynamic diameter less than or equal to 2.5 microns). In the SoCAB, high concentrations of O_3 are normally recorded during the late spring, summer, and early autumn months, when more intense sunlight drives enhanced photochemical reactions. Due to the prevailing daytime winds and time-delayed nature of photochemical smog, oxidant concentrations are highest in the inland areas.

[2] The discussion of meteorological and topographical conditions of the SoCAB is based on information provided in the Final 2016 Air Quality Management Plan (SCAQMD 2017).
[3] NO_X is a general term describing mixes of nitric oxide (NO), nitrogen dioxide (NO_2), and other oxides of nitrogen.

Temperature Inversions

Under ideal meteorological conditions and irrespective of topography, pollutants emitted into the air mix and disperse into the upper atmosphere. However, the Southern California region frequently experiences temperature inversions in which pollutants are trapped and accumulate close to the ground. The inversion, a layer of warm, dry air overlaying cool, moist marine air, is a normal condition in coastal Southern California. The cool, damp, and hazy sea air capped by coastal clouds is heavier than the warm, clear air, which acts as a lid through which the cooler marine layer cannot rise. The height of the inversion is important in determining pollutant concentration. When the inversion is approximately 2,500 feet above mean sea level (amsl), the sea breezes carry the pollutants inland to escape over the mountain slopes or through the passes.

At a height of 1,200 feet amsl, the terrain prevents the pollutants from entering the upper atmosphere, resulting in the pollutants settling in the foothill communities. Below 1,200 feet amsl, the inversion puts a tight lid on pollutants, concentrating them in a shallow layer over the entire coastal basin. Usually, inversions are lower before sunrise than during the daylight hours.

Mixing heights for inversions are lower in the summer and inversions are more persistent, being partly responsible for the high levels of O_3 observed during summer months in the SoCAB. Smog in Southern California is generally the result of these temperature inversions combining with coastal day winds and local mountains to contain the pollutants for long periods, allowing them to form secondary pollutants by reacting in the presence of sunlight. The SoCAB has a limited ability to disperse these pollutants due to typically low wind speeds and the surrounding mountain ranges.

Pollutants and Effects

Criteria Air Pollutants

Criteria air pollutants are defined as pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. The federal and state standards have been set, with an adequate margin of safety, at levels above which concentrations could be harmful to human health and welfare. These standards are designed to protect the most sensitive persons from illness or discomfort. Pollutants of concern include O_3, nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), PM_{10}, $PM_{2.5}$, and lead. These pollutants, as well as TACs, are discussed in the following paragraphs.[4] In California, sulfates, vinyl chloride, hydrogen sulfide, and visibility-reducing particles are also regulated as criteria air pollutants.

- **Ozone.** O_3 is a strong-smelling, pale blue, reactive, toxic chemical gas consisting of three oxygen atoms. It is a secondary pollutant formed in the atmosphere by a photochemical process involving the sun's energy and O_3 precursors. These precursors are mainly NO_X and volatile organic compounds (VOCs). The maximum effects of precursor emissions on O_3 concentrations usually occur several hours after they are emitted and many miles from the source. Meteorology and terrain play major roles in O_3 formation, and ideal conditions occur during summer and early autumn on days with low wind speeds or stagnant air, warm

[4] The descriptions of the criteria air pollutants and associated health effects are based on the U.S. Environmental Protection Agency's Criteria Air Pollutants (EPA 2016a) and the California Air Resources Board's Glossary of Air Pollutant Terms (CARB 2016a).

temperatures, and cloudless skies. Ozone exists in the upper atmosphere O_3 layer (stratospheric ozone) and at the Earth's surface in the troposphere (ozone).[5] The O_3 that the EPA and CARB regulate as a criteria air pollutant is produced close to the ground level, where people live, exercise, and breathe. Ground-level O_3 is a harmful air pollutant that causes numerous adverse health effects. Stratospheric O_3 occurs naturally in the upper atmosphere, where it reduces the amount of ultraviolet light (i.e., solar radiation) entering the Earth's atmosphere. Without the protection of the beneficial stratospheric O_3 layer, plant and animal life would be seriously harmed.

Ozone in the troposphere causes numerous adverse health effects; short-term exposures (lasting for a few hours) to O_3 at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes (EPA 2013). These health problems are particularly acute in sensitive receptors such as the sick, the elderly, and young children.

- **Nitrogen Dioxide.** Nitrogen dioxide (NO_2) is a brownish, highly reactive gas that is present in all urban atmospheres. The major mechanism for the formation of NO_2 in the atmosphere is the oxidation of the primary air pollutant nitric oxide (NO), which is a colorless, odorless gas. Nitrogen oxides (NO_X) play a major role, together with VOCs, in the atmospheric reactions that produce O_3. Nitrogen dioxide is formed from fuel combustion under high temperature or pressure. In addition, NO_X is an important precursor to acid rain and may affect both terrestrial and aquatic ecosystems. The two major emissions sources are transportation and stationary fuel combustion sources such as electric utility and industrial boilers. Nitrogen dioxide can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections (EPA 2016b).

- **Carbon Monoxide.** Carbon monoxide (CO) is a colorless, odorless gas formed by the incomplete combustion of hydrocarbon, or fossil fuels. CO is emitted almost exclusively from motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. In urban areas, such as the project location, automobile exhaust accounts for the majority of CO emissions. Carbon monoxide is a nonreactive air pollutant that dissipates relatively quickly; therefore, ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic. Carbon monoxide concentrations are influenced by local meteorological conditions—primarily wind speed, topography, and atmospheric stability. Carbon monoxide from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, which is a typical situation at dusk in urban areas from November to February. The highest levels of CO typically occur during the colder months of the year, when inversion conditions are more frequent.

  In terms of adverse health effects, CO competes with oxygen, often replacing it in the blood, reducing the blood's ability to transport oxygen to vital organs. The results of excess CO exposure can include dizziness, fatigue, and impairment of central nervous system functions.

[5] The troposphere is the layer of the Earth's atmosphere nearest to the surface of the Earth. The troposphere extends outward about 5 miles at the poles and about 10 miles at the equator.

- **Sulfur Dioxide.** Sulfur dioxide (SO_2) is a colorless, pungent gas formed primarily from incomplete combustion of sulfur-containing fossil fuels. The main sources of SO_2 are coal and oil used in power plants and industries; as such, the highest levels of SO_2 are generally found near large industrial complexes. In recent years, SO_2 concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO_2 and limits on the sulfur content of fuels.

  SO_2 is an irritant gas that attacks the throat and lungs and can cause acute respiratory symptoms and diminished ventilator function in children. When combined with particulate matter, SO_2 can injure lung tissue and reduce visibility and the level of sunlight. Sulfur dioxide can also yellow plant leaves and erode iron and steel.

- **Particulate Matter.** Particulate matter pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter can form when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. $PM_{2.5}$ and PM_{10} represent fractions of particulate matter. Coarse particulate matter (PM_{10}) consists of particulate matter that is 10 microns or less in diameter and is about 1/7 the thickness of a human hair. Major sources of PM_{10} include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood-burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. Fine particulate matter ($PM_{2.5}$) consists of particulate matter that is 2.5 microns or less in diameter and is roughly 1/28 the diameter of a human hair. $PM_{2.5}$ results from fuel combustion (e.g., from motor vehicles and power generation and industrial facilities), residential fireplaces, and woodstoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as sulfur oxides (SO_X), NO_X, and VOCs.

  $PM_{2.5}$ and PM_{10} pose a greater health risk than larger-size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract.

Noncriteria Air Pollutants

Toxic Air Contaminants

A substance is considered toxic if it has the potential to cause adverse health effects in humans, including increasing the risk of cancer upon exposure, or acute and/or chronic noncancer health effects. A toxic substance released into the air is considered a TAC. TACs are identified by federal and state agencies based on a review of available scientific evidence. In the state of California, TACs are identified through a two-step process that was established in 1983 under the Toxic Air Contaminant Identification and Control Act. This two- step process of risk identification and risk management and reduction was designed to protect residents from the health effects of toxic substances in the air. In addition, the California Air Toxics "Hot Spots" Information and Assessment Act, Assembly Bill (AB) 2588, was enacted by the legislature in 1987 to address public concern over the release of TACs into the atmosphere. The law requires facilities emitting toxic substances to provide local air pollution control districts with information that will allow an assessment of the air toxics problem, identification of air toxics emissions sources, location of resulting hotspots, notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public over 5 years.

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Examples include certain aromatic and chlorinated hydrocarbons, certain metals, and asbestos. TACs are generated by a number of sources, including stationary sources, such as dry cleaners, gas stations, combustion sources, and laboratories; mobile sources, such as automobiles; and area sources, such as landfills. Adverse health effects associated with exposure to TACs may include carcinogenic (i.e., cancer-causing) and noncarcinogenic effects. Noncarcinogenic effects typically affect one or more target organ systems and may be experienced on either short-term (acute) or long-term (chronic) exposure to a given TAC.

Diesel Particulate Matter

Diesel particulate matter (DPM) is part of a complex mixture that makes up diesel exhaust. Diesel exhaust is composed of two phases, gas and particle, both of which contribute to health risks. More than 90 percent of DPM is less than 1 micrometer in diameter (about 1/70th the diameter of a human hair) and thus is a subset of $PM_{2.5}$ (CARB 2016b). DPM is typically composed of carbon particles ("soot," also called black carbon, or BC) and numerous organic compounds, including over 40 known cancer-causing organic substances. Examples of these chemicals include polycyclic aromatic hydrocarbons, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene (CARB 2016b). The CARB classified "particulate emissions from diesel-fueled engines" (i.e., DPM; 17 CCR 93000) as a TAC in August 1998. DPM is emitted from a broad range of diesel engines: on-road diesel engines of trucks, buses, and cars and off-road diesel engines including locomotives, marine vessels, and heavy-duty construction equipment, among others. Approximately 70 percent of all airborne cancer risk in California is associated with DPM (CARB 2000). To reduce the cancer risk associated with DPM, CARB adopted a diesel risk reduction plan in 2000 (CARB 2000). Because it is part of $PM_{2.5}$, DPM also contributes to the same non-cancer health effects as $PM_{2.5}$ exposure. These effects include premature death; hospitalizations and emergency department visits for exacerbated chronic heart and lung disease, including asthma; increased respiratory symptoms; and decreased lung function in children. Several studies suggest that exposure to DPM may also facilitate development of new allergies (CARB 2016b). Those most vulnerable to noncancer health effects are children, whose lungs are still developing, and the elderly, who often have chronic health problems.

Odorous Compounds

Odors are generally regarded as an annoyance rather than a health hazard. Manifestations of a person's reaction to odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). The ability to detect odors varies considerably among the population and overall is quite subjective. People may have different reactions to the same odor. An odor that is offensive to one person may be perfectly acceptable to another (e.g., coffee roaster). An unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. In a phenomenon known as odor fatigue, a person can become desensitized to almost any odor, and recognition may only occur with an alteration in the intensity. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of receptors.

South Coast Air Basin Attainment Designation

Pursuant to the 1990 federal Clean Air Act amendments, the EPA classifies air basins (or portions thereof) as "attainment" or "nonattainment" for each criteria air pollutant, based on whether the NAAQS have been achieved. Generally, if the recorded concentrations of a pollutant are lower than the standard, the area is classified as "attainment" for that pollutant. If an area exceeds the standard, the area is classified as "nonattainment" for that pollutant. If there is not enough data available to determine whether the standard is exceeded in an area, the area is designated as "unclassified" or "unclassifiable." The designation of "unclassifiable/attainment" means that the area meets the standard or is expected to meet the standard despite a lack of monitoring data. Areas that achieve the standards after a nonattainment designation are re-designated as maintenance areas and must have approved maintenance plans to ensure continued attainment of the standards. The California Clean Air Act, like its federal counterpart, called for the designation of areas as "attainment" or "nonattainment," but based on CAAQS rather than the NAAQS. Table 5.2-2, *Attainment Status of Criteria Pollutants in the South Coast Air Basin*, depicts the current attainment status of the project site with respect to the NAAQS and CAAQS.

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

Pollutant	Designation/Classification	
	State	Federal
Ozone (O_3) – 1 hour	**Nonattainment**	No federal standard
Ozone (O_3) – 8 hour	**Nonattainment**	**Extreme nonattainment**
Nitrogen dioxide (NO_2)	Attainment	Unclassifiable/attainment
Carbon monoxide (CO)	Attainment	Attainment/maintenance
Sulfur dioxide (SO_2)	Attainment	Unclassifiable/attainment
Coarse particulate matter (PM_{10})	**Nonattainment**	Attainment/maintenance
Fine particulate matter ($PM_{2.5}$)	**Nonattainment**	**Serious nonattainment**
Lead (Pb)	Attainment	Nonattainment
Hydrogen sulfide	Unclassified	No federal standard
Sulfates	Attainment	No federal standard
Visibility-reducing particles	Unclassified	No federal standard
Vinyl chloride	No designation	No federal standard

Sources: Appendix B.
Notes: **Bold text** = not in attainment; attainment = meets the standards; attainment/maintenance = achieve the standards after a nonattainment designation; nonattainment = does not meet the standards; unclassified or unclassifiable = insufficient data to classify; unclassifiable/attainment = meets the standard or is expected to meet the standard despite a lack of monitoring data.

In summary, the SoCAB is designated as a nonattainment area for federal and state O_3 standards and federal and state $PM_{2.5}$ standards. The SoCAB is designated as a nonattainment area for state PM_{10} standards; however, it is designated as an attainment area for federal PM_{10} standards. The SoCAB is designated as an attainment area for federal and state CO standards, federal and state NO_2 standards, and federal and state SO_2 standards. While the SoCAB has been designated as nonattainment for the federal rolling three-month average lead standard, it is designated attainment for the state lead standard (EPA 2016c; CARB 2016d).

Despite the current nonattainment status for O_3 and $PM_{2.5}$, air quality in the SoCAB has generally improved since the inception of air pollutant monitoring in 1976. This improvement is mainly due to lower-polluting on-road motor vehicles, more stringent regulation of industrial sources, and the implementation of emission reduction strategies by SCAQMD. Despite continued population growth, air quality has improved significantly over the years, primarily due to the impacts of the region's air quality control program. PM_{10} levels have declined almost 50 percent since 1990, and $PM_{2.5}$ levels have declined 50 percent since measurements began in 1999 (SCAQMD 2013). Similar improvements are observed with O_3, although the rate of O_3 decline has slowed in recent years.

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Local Ambient Air Quality

CARB, air districts, and other agencies monitor ambient air quality at approximately 250 air quality monitoring stations across the state. SCAQMD monitors local ambient air quality at the project site. Air quality monitoring stations usually measure pollutant concentrations 10 feet above ground level; therefore, air quality is often referred to in terms of ground-level concentrations. The most recent background ambient air quality data from 2014 to 2016 are presented in Table 5.2-3, *Ambient Air Quality Monitoring Summary*. The Long Beach Webster Street monitoring station, at 2425 Webster Street, is the nearest air quality monitoring station, approximately 7.5 miles east from the project site. The data collected at this station are considered representative of the air quality experienced in the project vicinity. Air quality data for O_3, NO_2, CO, SO_2, and PM_{10} from the Long Beach Webster Street monitoring station are provided in Table 5.2-3. Because $PM_{2.5}$ is not monitored at the Webster Street monitoring station, $PM_{2.5}$ measurements were taken from the Long Beach North Long Beach Boulevard monitoring station (3648 North Long Beach Boulevard, approximately 9.5 miles east-northeast of the project site). The number of days exceeding the ambient air quality standards is also shown in Table 5.2-3.

Table 5.2-3 Ambient Air Quality Monitoring Summary

Monitoring Station	Unit	Averaging Time	Agency/ Method	Ambient Air Quality Standard	Measured Concentration by Year			Exceedances by Year		
					2014	2015	2016	2014	2015	2016
Ozone (O_3)										
Long Beach Webster Street	ppm	Maximum 1- hour concentration	State	0.09	0.087	0.087	0.079	0	0	0
	ppm	Maximum 8- hour concentration	State	0.070	0.72	0.067	0.059	1	0	0
			Federal	0.070	0.72	0.066	0.059	1	0	0
Nitrogen Dioxide (NO_2)										
Long Beach Webster Street	ppm	Maximum 1- hour concentration	State	0.18	0.135	0.101	0.075	0	0	0
			Federal	0.100	0.1359	0.1018	0.0756	2	1	0
	ppm	Annual concentration	State	0.030	ND	0.020	0.018	—	—	—
			Federal	0.053	—	—	—	—	—	—
Carbon Monoxide (CO)										
Long Beach Webster Street	ppm	Maximum 1- hour concentration	State	20	—	—	—	—	—	—
			Federal	35	3.7	3.3	3.3	0	0	0
	ppm	Maximum 8- hour concentration	State	9.0	ND	—	—	0	0	—
			Federal	9	2.6	2.2	2.2	0	0	0
Sulfur Dioxide (SO_2)										
Long Beach Webster Street	ppm	Maximum 1- hour concentration	Federal	0.075	0.0147	0.0375	0.0178	0	0	0
	ppm	Maximum 24- hour concentration	Federal	0.14	0.030	0.046	0.036	0	0	0

	ppm	Annual concentration	Federal	0.030	0.0132[1]	0.0099[1]	0.092	0	0	0
Coarse Particulate Matter (PM_{10})[2]										
Long Beach Webster Street	μg/m³	Maximum 24-hour concentration	State	50	84.0	79.0	75.3	19.3 (3)	37.6 (6)	ND (8)
			Federal	150	84.0	80.0	75.0	0.0 (0)	0.0 (0)	0.0 (0)
	μg/m³	Annual concentration	State	20	29.6	30.9	ND	—	—	—
Fine Particulate Matter ($PM_{2.5}$)[2]										
Long Beach North Long Beach Boulevard	μg/m³	Maximum 24-hour concentration	Federal	35	51.5	54.6	29.3	ND (2)	3.1 (3)	0.0 (0)
	μg/m³	Annual concentration	State	12	ND	ND	10.3	—	—	—
			Federal	12.0	ND	10.8	10.3	—	—	—

Sources: Appendix B.
Notes: ppm = parts per million by volume; ND = insufficient data available to determine the value; — = not available; μg/m3 = micrograms per cubic meter.
Data taken from CARB iADAM (http://www.arb.ca.gov/adam) and EPA AirData (http://www.epa.gov/airdata/) represent the highest concentrations experienced over a given year.
Exceedances of federal and state standards are only shown for O_3 and particulate matter. Daily exceedances for particulate matter are estimated days because PM_{10} and $PM_{2.5}$ are not monitored daily. All other criteria pollutants did not exceed federal or state standards during the years shown. There is no federal standard for 1-hour ozone, annual PM_{10}, or 24-hour SO_2, nor is there a state 24-hour standard for $PM_{2.5}$.
Long Beach Webster Street Monitoring Station is at 2425 Webster Street, Long Beach, California 90810.
Long Beach North Long Beach Boulevard Monitoring Station is at 3648 North Long Beach Boulevard, Long Beach, California 90807.
1 Mean does not satisfy minimum data completeness criteria.
2 Measurements of PM_{10} and $PM_{2.5}$ are usually collected every 6 days and every 1 to 3 days, respectively. Number of days exceeding the standards is a mathematical estimate of the number of days concentrations would have been greater than the level of the standard had each day been monitored. The numbers in parentheses are the measured number of samples that exceeded the standard.

Sensitive Receptors

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. People most likely to be affected by air pollution include children, the elderly, athletes, and people with cardiovascular and chronic respiratory diseases. Facilities and structures where these air pollution-sensitive people live or spend considerable amounts of time are known as sensitive receptors. Land uses where air pollution-sensitive individuals are most likely to spend time include schools and schoolyards, parks and playgrounds, daycare centers, nursing homes, hospitals, and residential communities (sensitive sites or sensitive land uses) (CARB 2005). The SCAQMD identifies sensitive receptors as residences, schools, playgrounds, childcare centers, long-term healthcare facilities, rehabilitation centers, convalescent centers, and retirement homes (Dudek 2019). Residential land uses are located to the north, east, and west of the project. The closest off-site sensitive receptors to the project site include residences located approximately 77 feet north of the project's limits of construction.

5.2.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would: [6]

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

AQ-2 Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.

AQ-3 Expose sensitive receptors to substantial pollutant concentrations.

AQ-4 Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

5.2.2.1 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT THRESHOLDS

The SCAQMD has established Air Quality Significance Thresholds, as revised in March 2015, that set forth quantitative emission significance thresholds below which a project would not have a significant impact on ambient air quality under existing and cumulative conditions. The quantitative air quality analysis provided herein applies the SCAQMD thresholds identified in Table 5.2-4, *SCAQMD Air Quality Significance Thresholds*, to determine the potential for the project to result in a significant impact under CEQA.

Table 5.2-4 SCAQMD Air Quality Significance Thresholds

Criteria Pollutants Mass Daily Thresholds		
Air Pollutant	**Construction (Pounds per Day)**	**Operation (Pounds per Day)**
Reactive Organic Gases (ROG/VOC)	75	55
Nitrogen Oxides (NO_X)	100	55
Carbon Monoxide (CO)	550	550
Sulfur Oxides (SO_X)	150	150
Coarse Particulates (PM_{10})	150	150
Fine Particulates ($PM_{2.5}$)	55	55
Lead[1]	3	3
TACs and Odor Thresholds		
TACs[2]	Maximum incremental cancer risk ≥ 10 in 1 million Chronic and acute hazard index ≥ 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
Ambient Air Quality Standards for Criteria Pollutants[3]		
NO_2 1-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state)	

[6] The significance thresholds set forth here are from the CEQA Guidelines Update approved by the California Office of Administrative Law in December 2018. Impacts associated with Threshold 2 analyzed in the Initial Study: *Violate any air quality standard or contribute substantially to an existing or projected air quality violation*, was deleted from CEQA Guidelines Appendix G Update, and is now incorporated into the additional AQ Thresholds.

NO_2 annual arithmetic mean	0.030 ppm (state) and 0.0534 ppm (federal)
CO 1-hour average CO 8-hour average CO 1-hour average CO 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) and 35 ppm (federal) 9.0 ppm (state/federal)
PM_{10} 24-hour average	10.4 μg/m³ (construction)[4] 2.5 μg/m³ (operation)
PM_{10} annual average	1.0 μg/m³
$PM_{2.5}$ 24-hour average	10.4 μg/m³ (construction)[4] 2.5 μg/m³ (operation)

Source: Appendix B.
Notes: Refer to Table 5.2-2 for state and federal attainment/non-attainment status of criteria pollutants of concern
SCAQMD = South Coast Air Quality Management District; VOC = volatile organic compounds; NO_X = oxides of nitrogen; CO = carbon monoxide; SO_X = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; TAC = toxic air contaminant; NO_2 = nitrogen dioxide; ppm = parts per million by volume; μg/m³ = micrograms per cubic meter.
GHG emissions thresholds for industrial projects, as added in the March 2015 revision to the SCAQMD Air Quality Significance Thresholds, were not include included in Table 5 as they are addressed within the GHG emissions analysis and not the air quality study.
1 The phaseout of leaded gasoline started in 1976. Since gasoline no longer contains lead, the project is not anticipated to result in impacts related to lead; therefore, it is not discussed in this analysis.
2 TACs include carcinogens and noncarcinogens.
3 Ambient air quality standards for criteria pollutants are based on SCAQMD Rule 1303, Table A-2, unless otherwise stated.
4 Ambient air quality thresholds are based on SCAQMD Rule 403.

Consistency with the Air Quality Management Plan

The evaluation of whether the project would conflict with or obstruct implementation of the applicable air quality plan (Impact AQ-1) is based on the SCAQMD CEQA Air Quality Handbook (Dudek 2019), Chapter 12, Sections 12.2 and 12.3. The first criterion assesses if the project would result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay the timely attainment of air quality standards of the interim emissions reductions specified in the AQMP. The second criterion is if the project would exceed the assumptions in the AQMP or increments based on the year of project buildout and phase.

Regional Air Quality Impacts

To evaluate the potential for the project to violate any air quality standard or contribute substantially to an existing or projected air quality violation, this analysis applies the SCAQMD's construction and operational criteria pollutants mass daily thresholds, as shown in Table 5.2-4. A project would result in a substantial contribution to an existing air quality violation of the NAAQS or CAAQS for O_3, which is a nonattainment pollutant, if the project's construction or operational emissions would exceed the SCAQMD VOC or NO_X thresholds shown in Table 5.2-4. These emissions-based thresholds for O_3 precursors are intended to serve as a surrogate for an "ozone significance threshold" (i.e., the potential for adverse O_3 impacts to occur). This approach is used because O_3 is not emitted directly, and the effects of an individual project's emissions of O_3 precursors (VOC and NO_X) on O_3 levels in ambient air cannot be determined through air quality models or other quantitative methods.

Localized Significance Thresholds

The assessment of the project's potential to expose sensitive receptors to substantial pollutant concentrations includes a localized significance threshold (LST) analysis, as recommended by the SCAQMD, to evaluate the potential of localized air quality impacts to sensitive receptors in the immediate vicinity of the project. For project sites of 5 acres or less, the SCAQMD LST Methodology (2009) includes lookup tables that can be used to determine the maximum allowable daily emissions that would satisfy the localized significance criteria (i.e., the emissions would not cause an exceedance of the applicable concentration limits for NO_2, CO, PM_{10}, and $PM_{2.5}$) without performing project-specific dispersion modeling. Although the proposed development area of the site is greater than 5 acres (approximately 5.71 acres), the project would disturb less than 5 acres in one day, as discussed in detail in the following text, so it is appropriate to use the lookup tables for the LST evaluation.

The screening-level LST significance thresholds for NO_2 and CO represent the allowable increase in concentrations above background levels in the vicinity of a project that would not cause or contribute to an exceedance of the relevant ambient air quality standards, while the screening-level threshold for PM_{10} represents compliance with Rule 403 (Fugitive Dust). The screening-level LST significance threshold for $PM_{2.5}$ is intended to ensure that construction emissions do not contribute substantially to existing exceedances of the $PM_{2.5}$ ambient air quality standards. The allowable emission rates depend on the following parameters:

- Source-receptor area (SRA) in which the project is located
- Size of the project site
- Distance between the project site and the nearest sensitive receptor (e.g., residences, schools, hospitals)

The project site is in SRA 3 (Southwest Coastal Los Angeles County). The SCAQMD provides guidance for applying California Emissions Estimator Model (CalEEMod) to the screening-level LSTs. The screening-level LST pollutant screening level concentration data is currently published for 1-, 2-, and 5-acre sites for varying distances. The maximum number of acres disturbed on the peak day was estimated using the "Fact Sheet for Applying CalEEMod to Localized Significance Thresholds" (SCAQMD 2011), which provides estimated acres per 8-hour day for crawler tractors, graders, rubber-tired dozers, and scrapers. Based on the SCAQMD guidance, and assuming an excavator can grade 0.5 acres per 8-hour day (similar to graders, dozers, and tractors), it was estimated that the maximum daily area on the project site that would be disturbed by off-road equipment would be 1 acre per day (two excavators operating during the grading phase). Because the total disturbed acreage would be 5.71 acres over approximately 87 days (5 days/week for 4.5 months), the estimate of 1 acre per day of disturbance is conservative. Because the SCAQMD does not provide lookup table values for sites less than 1 acre, the LST values for 1 acre within SRA 3 were used.

The nearest sensitive-receptor land use (a residence) is approximately 77 feet north of the project's limits of construction. The distance of sensitive receptors to the project site is therefore within the SCAQMD specified thresholds for the first 25-meter increment of LST modeling. As such, the LST receptor distance was assumed to be 82 feet (25 meters), which is the shortest distance provided by the SCAQMD lookup tables. The screening-level LST values from the SCAQMD lookup tables for SRA 3 (Southwest Coastal Los Angeles County) for a 1- acre project site and a receptor distance of 25 meters (82 feet) are shown in Table 5.2-5, *Screening-Level Localized Significance Thresholds Analysis for Project Construction*.

Table 5.2-5 Screening-Level Localized Significance Thresholds Analysis for Project Construction

Air Pollutant	Threshold (Pounds per Day)
Nitrogen Oxides (NO_X)	91
Carbon Monoxide (CO)	664
Coarse Particulates (PM_{10})	5
Fine Particulates ($PM_{2.5}$)	3

Source: Appendix B.
Notes: NO_2 = nitrogen dioxide; CO = carbon monoxide; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter.
LST thresholds were determined based on the values for 1-acre site at a distance of 25 meters (82 feet) from the nearest sensitive receptor.

CO Hotspots

Areas of vehicle congestion have the potential to create pockets of CO called hotspots. These pockets have the potential to exceed the state one-hour standard of 20 ppm or the eight-hour standard of 9 ppm. Because CO is produced in greatest quantities from vehicle combustion and does not readily disperse into the atmosphere, adherence to ambient air quality standards is typically demonstrated through an analysis of localized CO concentrations. Hotspots are typically produced at intersections, where traffic congestion is highest because vehicles queue for longer periods and are subject to reduced speeds.

The significance of localized project impacts depends on whether ambient CO levels in the vicinity of the project are above or below state and federal CO standards. If ambient levels are below the standards, a project is considered to have significant impacts if project emissions result in an exceedance of one or more of these standards. If ambient levels already exceed a state or federal standard, then project emissions are considered significant if they increase ambient concentrations by a measurable amount. The SCAQMD defines a measurable amount as 1.0 ppm or more for the 1-hour CO concentration or 0.45 ppm or more for the 8-hour CO concentration.

Health Risk

The construction HRA applies the SCAQMD risk thresholds for TACS presented in Table 5.2-4, which are a maximum incremental cancer risk greater than or equal to 10 in 1 million and a chronic hazard index greater than or equal to 1.0 (project increment).

Odors

The potential for the project to result in an odor impact is based on the project's land use type and anticipated construction activity, and the potential for the project to create an odor nuisance pursuant to SCAQMD Rule 402.

5.2.3 Environmental Impacts

5.2.3.1 APPROACH AND METHODOLOGY

Construction Emissions

Emissions from the construction phase of the project were estimated using CalEEMod Version 2016.3.2. Construction scenario assumptions, including phasing, equipment mix, and vehicle trips, were based on information provided by the project applicant and CalEEMod default values when project specifics were not known.

For purposes of estimating project emissions, and based on information provided by the project applicant, a base year of 2017 and a construction duration of 29 months was assumed in the analysis.[7] The analysis contained herein is based on the following assumptions (duration of phases is approximate):

- Grading: 4 months
- Building Construction, Parking Garage: 7 months
- Paving: 2 months
- Building Construction, Residential (above parking): 18 months
- Application of Architectural Coatings: 3 months

The 4-month grading phase will include site grading, remediation, temporary shoring, and installation of utilities. The temporary shoring would be approximately 125 feet long.

Both the parking garage and the residential development would be painted during the three-month architectural coating phase. The residential building construction phase and the architectural coating phase end during the same month because the residential building construction phase duration includes finalization of the project construction and exterior improvements as well as demobilization.

Construction-worker estimates and vendor truck trips by construction phase were based on CalEEMod default values. Haul truck trips during the grading phase were based on project applicant–provided earthwork quantities. Grading is currently estimated to involve 120,915 cubic yards (CY) of cut and 1,646 CY of fill, resulting in 119,270 CY of soil for export. Assuming a haul truck capacity of 16 CY per truck, earth-moving activities would result in approximately 7,455 round trips (14,910 one-way truck trips) during the grading phase. CalEEMod default trip length values were used for the distances for all construction-related trips. Fugitive dust generated during truck loading is included in CalEEMod as an on-site source of fugitive dust emissions and is calculated based on estimated throughput of loaded and unloaded material (i.e., 119,270 CY of soil export).

It should be noted that in consultation with the City of Torrance, the applicant included an assessment of being required to excavate soils beyond the estimated 120,915 cubic yards due to the potential to encounter contaminated soils. Notably, the air quality technical report states that the applicant would work with the

[7]Construction emissions based on earlier years are higher compared to emissions based on later years. This is due to the assumption that with each passing year, older more polluting equipment are replaced by newer, cleaner, less polluting equipment based on compliance with EPA's non-road diesel engine requirements. Therefore, the construction emissions inventory is a conservative estimate.

Department of Toxic Substances Control, per the City's request, and would comply with the provisions of the pending land use covenant, which does not envision environmental remediation of on-site soils. As such, the additional 10 percent excavation buffer (which would equate to 11,927 CY) specified in the Geocon letter regarding "Suggested Contingency Factor for Estimation of Soil Excavation during Grading" (Geocon 2018b) would be balanced on site and would not be exported off site. In addition, a 4-foot layer of clean fill will be placed across the entire Lot 1 to address potential hazardous material concerns. It is anticipated that this fill material will consist of the competent native materials excavated to obtain the above-referenced pad elevations associated with the development. In order to estimate fugitive dust from excavation and movement of the additional 11,927 CY of soil, fugitive dust (PM_{10} and $PM_{2.5}$) was calculated using a spreadsheet model based on the CalEEMod equations for on-site material handling.

The construction equipment mix and vehicle trips used for estimating the project-generated construction emissions, which were provided by the applicant, are shown in Table 5.2-6, *Construction Scenario Assumptions*. For the analysis, it was generally assumed that heavy construction equipment would be operating at the site 5 days per week, 8 hours per day (22 days per month) during project construction.

Table 5.2-6 Construction Scenario Assumptions

	One-Way Vehicle Trips			Equipment		
Construction Phase	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Total Haul Truck Trips	Equipment Type	Quantity	Usage Hours
Grading	24	0	14,910	Excavators	2	8
				Rubber-tired loaders	1	8
Building construction – parking garage	100	40	0	Tractors/loaders/ backhoes	2	8
Paving	8	2	0	Pavers	1	8
				Paving equipment	1	8
				Rollers	1	8
Building construction – residential (above garage)	182	30	0	Cranes	1	6
				Forklifts	2	8
				Welders	1	4
Architectural Coating	56	2	0	—	—	—

Source: Appendix B.
Notes: n/a = not applicable
[1] Based on information provided by the applicant.

The project would implement dust control strategies as a project design feature (see Appendix B for further details). To reflect implementation of proposed dust control strategies, the following was assumed in CalEEMod:

- Water exposed area three times per day (61 percent reduction in PM_{10} and $PM_{2.5}$).
- As a surrogate for watering unpaved road three times per day, the "soil stabilizer for unpaved" option was used assuming a 61 percent reduction in PM_{10} and $PM_{2.5}$.
- Limit vehicle travel on unpaved roads to 15 mph.

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Operation Emissions

Emissions from the operational phase of the project were estimated using CalEEMod Version 2016.3.2. Operational year 2019 was assumed consistent with the traffic impact study (TIS) prepared for the project.

Area Sources

CalEEMod was used to estimate operational emissions from area sources, including emissions from consumer product use, architectural coatings, and landscape maintenance equipment. Emissions associated with natural gas usage in space heating, water heating, and stoves are calculated in the building energy use module of CalEEMod, as described in the following text. The project would not include woodstoves or fireplaces (wood or natural gas). As such, area source emissions associated with hearths were not included.

Consumer products are chemically formulated products used by household and institutional consumers, including detergents; cleaning compounds; polishes; floor finishes; cosmetics; personal care products; home, lawn, and garden products; disinfectants; sanitizers; aerosol paints; and automotive specialty products. Other paint products, furniture coatings, or architectural coatings are not considered consumer products (CAPCOA 2017). Consumer product VOC emissions are estimated in CalEEMod based on the floor area of residential and nonresidential buildings and on the default factor of pounds of VOC per building square foot per day. For parking lot land uses, CalEEMod estimates VOC emissions associated with use of parking surface degreasers based on a square footage of parking surface area and pounds of VOC per square foot per day.

VOC off-gassing emissions result from evaporation of solvents contained in surface coatings such as in paints and primers using during building maintenance. CalEEMod calculates the VOC evaporative emissions from application of residential and nonresidential surface coatings based on the VOC emission factor, the building square footage, the assumed fraction of surface area, and the reapplication rate. The VOC emission factor is based on the VOC content of the surface coatings, and SCAQMD's Rule 1113 (Architectural Coatings) governs the VOC content for interior and exterior coatings. The model default reapplication rate of 10 percent of area per year is assumed. Consistent with CalEEMod defaults, it is assumed that the residential surface area for painting equals 2.7 times the floor square footage, with 75 percent assumed for interior coating and 25 percent assumed for exterior surface coating. For nonresidential land uses (e.g., community and fitness rooms), it is assumed that the surface area for painting equals 2.0 times the floor square footage, with 75 percent assumed for interior coating and 25 percent assumed for exterior surface coating. For the parking garage, the architectural coating area is assumed to be 6 percent of the total square footage, consistent with the supporting CalEEMod studies provided as an appendix to the CalEEMod User's Guide (CAPCOA 2017).

Landscape maintenance includes fuel combustion emissions from equipment such as lawn mowers, rototillers, shredders/grinders, blowers, trimmers, chain saws, and hedge trimmers. The emissions associated from landscape equipment use are estimated based on CalEEMod default values for emission factors (grams per residential dwelling unit per day and grams per square foot of nonresidential building space per day) and number of summer days (when landscape maintenance would generally be performed) and winter days. For Los Angeles County, the average annual "summer" days are estimated to 365 days; however, it is assumed that landscaping equipment would likely only operate during the week (not weekends), so operational days were assumed to be 250 days per year in CalEEMod (CAPCOA 2017). By design, the project would not include turf, and the proposed landscaped area would be minimal(approximately 96,385 square feet of landscaping in the 5.71-acre development area). Based on information provided by the applicant, it is assumed that any landscape equipment used would be powered by electricity, when needed. Nonetheless, emissions associated with potential landscape maintenance equipment were included, and no emission reduction features related to electric landscape equipment were assumed in order to conservatively capture potential project operational emission sources.

Energy Sources

As represented in CalEEMod, energy sources include emissions associated with building electricity and natural gas usage (non-hearth). Electricity use would contribute indirectly to criteria air pollutant emissions; however, the emissions from electricity use are only quantified for GHGs in CalEEMod, since criteria pollutant emissions occur at the site of the power plant, which is typically off-site.

The energy use from residential land uses is calculated in CalEEMod based on the Residential Appliance Saturation Study. For nonresidential buildings, CalEEMod energy intensity values (natural gas usage per square foot per year) assumptions were based on the California Commercial End-Use Survey database. CalEEMod default values for energy consumption were applied for the project analysis and were adjusted to assume regulatory compliance with the 2016 CALGreen Tier 1 standards. Per the 2016 CALGreen Tier 1 standards (24 CCR, Part 11), which would be required by the City, the project would be required to demonstrate that buildings exceed Title 24, Part 6, of the California Code of Regulations energy efficiency standards by 15 percent.

Mobile Sources

Mobile sources for the project would primarily be motor vehicles (automobiles and light-duty trucks) traveling to and from the project site. Motor vehicles may be fueled with gasoline, diesel, or alternative fuels. Based on the TIS prepared for the project by KHR Associates, the proposed residential development is anticipated to generate 5.44trips per dwelling unit (KHR Associates 2019), which was assumed for the weekday trip rate.[8] Accordingly, the 248 dwelling units would generate approximately 1,649 trips per day during the week. Because the default CalEEMod weekday trip rate for mid-rise apartments is the same as the assumed project trip rate, the default CalEEMod weekday trip rates were used, and no adjustments were necessary. CalEEMod default data, including temperature, trip characteristics, variable start information, emissions factors, and trip distances, were used for the model inputs to estimate daily emissions from proposed vehicular sources. Project-related traffic was assumed to include a mixture of vehicles in accordance with the model outputs for traffic. Emission factors representing the vehicle mix and emissions for 2019 were used to estimate emissions associated with full buildout of the project.

The California Air Pollution Control Officers Association has developed methodologies for quantifying the GHG emission reductions associated with numerous mitigation measures (CAPCOA 2010). Several of the measures would also reduce air pollutant emissions related to land use and transportation planning, including to reduce vehicle trips and/or trip lengths, enhance walking and bicycles as alternative modes of transportation, enhance availability of transit, and incorporate other approaches. In regard to mobile source emission reduction

[8] The TIS used the trip rates provided in the Institute of Transportation Engineers Trip Generation Manual, 9th Edition (ITE 2012), for the mid-rise apartment land use category.

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features relating to land use, it was assumed that the project would involve an increase in typical density and an improvement in accessibility to job centers. The project's density of 10 dwelling units per acre is greater than the assumed blended average density of residential development of 7.6 dwelling units per acre (CAPCOA 2010). The project's density within the 5.71-acre Lot 1, which is the only lot in which project related development would occur, is approximately 43.4 dwelling units per acre. Accordingly, assuming a project density of 10 dwelling units per acre instead of 43.4 dwelling units per acre is conservative.

Job opportunities are located within one to five miles of the project site, and it was assumed in CalEEMod that job centers are located within five miles of the project site, which is less than the assumed average work trip length of twelve miles (CAPCOA 2010). The location of job opportunities near the project site would result in a reduction in home-to-work trip lengths for residents that work nearby. The reduction in overall commute vehicle miles traveled would result in an associated reduction in mobile source emissions. The City is home to nearly 400 headquarter businesses, which offer various employment opportunities to Torrance residents (Torrance Office of Economic Development 2017a). The City's Office of Economic Development identified the top 12 Torrance employers, 9 of which are within five miles or less of the project site (approximate trip distance from the project site provided in parenthesis): American Honda Motor Co. Inc. (5 miles), Robinson Helicopter Company (1 mile), Hi-Shear Corporation (2 miles), Alcoa Fastening Systems (2 miles), Torrance Refining Company/ Formerly Exxon Mobil Oil Corporation (5 miles), Pelican Productions Inc. (2 miles), Macy's Department Store (2.5 miles), L-3 Communications Electron (2 miles), and Saatchi & Saatchi (2 miles) (Torrance Office of Economic Development 2017b). Another of the top 12 employers, Honeywell Aerospace, is less than 7 miles from the project site (Torrance Office of Economic Development 2017b). In addition, there are multiple retail centers located near the project, including the Del Amo Fashion Center within 2.5 miles and a strip mall 0.5 mile north.

In regard to neighborhood enhancements, the project would improve the pedestrian network on the project site and connecting off-site, which results in minor reductions to motor vehicle emissions. Pedestrian network improvements include providing access and links to pedestrian facilities contiguous with the project site and minimizing barriers to pedestrian access and interconnectivity, which would encourage pedestrian travel. The City's Hawthorne Boulevard Corridor Specific Plan, which covers the area north of the project site along Hawthorne Boulevard, promotes a walkable commercial corridor of neighborhood-serving retail uses, office, and restaurants (Torrance 1996). Project residents would have access to the walkable Hawthorne Boulevard corridor and adjacent retail and commercial uses. Pedestrian network improvements on-site and connections to off-site facilities would result in a minor reduction in vehicle miles traveled and an associated reduction in mobile source emissions by shifting travel from motor vehicles to pedestrian or bicycle travel (CAPCOA 2010).

The project design would include pedestrian/bicycle safety and traffic calming measures in excess of City requirements. Internal roadways would be designed to reduce motor vehicle speeds and encourage pedestrian and bicycle trips with traffic-calming features and thereby would reduce vehicle miles traveled.[9] All of the on-site project intersections would have marked crosswalks, and approximately 50 percent of intersections would

[9] Per the CAPCOA report, "Quantifying Greenhouse Gas Mitigation Measures: A Resource for Local Government to Assess Emission Reductions from Greenhouse Gas Mitigation Measures" (CAPCOA 2010), types of traffic-calming features include marked crosswalks, count-down signal timers, curb extensions, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, roundabouts or mini-circles, on-street parking, planter strips with street trees, chicanes/chokers, and others.

have raised medians (Dudek 2019). Approximately 25 percent of internal streets would provide on-street parking and approximately 10 percent would have raised medians with landscaping (Dudek 2019). In addition, a raised median would be provided at 50 percent of the project access points, and an off-site deceleration lane for slowing entrance traffic to the site from Hawthorne Boulevard is included in the project design. Based on these considerations, it was conservatively assumed in CalEEMod that 25 percent of intersections and 25 percent of streets would include traffic-calming measures.

Carbon Monoxide Hotspots

Mobile source impacts occur on two scales of motion. Regionally, project-related travel would add to regional trip generation and increase the vehicle miles traveled within the local airshed and the SoCAB. Locally, project generated traffic would be added to the City's roadway system near the project site. If such traffic occurs during periods of poor atmospheric ventilation, is composed of a large number of vehicles cold-started and operating at pollution-inefficient speeds, and is operating on roadways already crowded with other traffic, there is a potential for the formation of CO hotspots in the area immediately around points of congested traffic. Because of continued improvement in vehicular emissions at a rate faster than the rate of vehicle growth and/or congestion, the potential for CO hotspots in the SoCAB is steadily decreasing.

Projects contributing to adverse traffic impacts may result in the formation of CO hotspots. To verify that the project would not cause or contribute to a violation of the CO standard, a screening evaluation of the potential for CO hotspots was conducted. The potential for CO hotspots is evaluated based on the results of the TIS (KHR Associates 2019), and the California Department of Transportation (Caltrans) Institute of Transportation Studies Transportation Project-Level Carbon Monoxide Protocol (CO Protocol; 1997) was followed. For projects within an area designated as attainment or unclassified under the CAAQS or NAAQS, the CO Protocol identifies screening criteria for consideration. The first screening criteria focuses on projects that are likely to worsen air quality, which would occur if (1) the project significantly increases the percentage of vehicles operating in cold start mode (greater than 2 percent), (2) the project significantly increases traffic volumes (greater than 5 percent), and/or (3) the project worsens traffic flow. In addition to consideration of whether the project would worsen air quality, CO hotspots are typically evaluated when (1) the level of service (LOS) of an intersection or roadway worsens to LOS E or worse; (2) signalization and/or channelization is added to an intersection; and (3) sensitive receptors such as residences, schools, and hospitals are located in the vicinity of the affected intersection or roadway segment.

Construction Health Risk Assessment

An HRA was performed to evaluate potential health risk associated with construction of the project. The following discussion summarizes the dispersion modeling and HRA methodology; supporting construction HRA documentation, including detailed assumptions, is presented in Appendix B.

For risk assessment purposes, PM_{10} in diesel exhaust is considered DPM, originating mainly from off-road equipment operating at a defined location for a given length of time at a given distance from sensitive receptors. Less-intensive, more-dispersed emissions result from on road vehicle exhaust (e.g., heavy-duty diesel trucks). For the construction HRA, the CalEEMod scenario for the project was adjusted to reduce diesel truck one-way trip distances to 1,000 feet to estimate emissions from truck pass-by at proximate receptors.

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Additionally, the evaluation of $PM_{2.5}$ encompassed fine dust particles, including diatomaceous soils and amorphous silica. Diatomaceous soils are primarily confined to Lot 2, the blufftop portion of the site. There would be minimal potential disturbance of this area. The site's distance to off-site receptors, the prevailing wind direction, and the fugitive dust controls required by SCAQMD Rule 403 during project construction would substantially reduce any exposure to sensitive receptors from diatomaceous soils and amorphous silica exposure.

The air dispersion modeling methodology was based on generally accepted modeling practices of SCAQMD (SCAQMD 2018a). Air dispersion modeling was performed using EPA's American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) Version 16216 modeling system (computer software) with the Lakes Environmental Software implementation/user interface, AERMOD View Version 9.5.0. The HRA followed the Office of Environmental Health Hazard Assessment (OEHHA) 2015 guidelines (OEHHA 2015) and SCAQMD guidance to calculate the health risk impacts at all proximate receptors, including off-site residential receptors, the nearest school, and worker receptors, as further discussed below. The dispersion modeling included the use of standard regulatory default options. AERMOD parameters were selected consistent with the SCAQMD and EPA guidance and identified as representative of the project site and project activities. Principal parameters of this modeling are presented in Table 5.2-7, *AERMOD Principal Parameters*.

Table 5.2-7 AERMOD Principal Parameters

Parameter	Details
Meteorological data	AERMOD-specific meteorological data for the Hawthorne Airport air monitoring station (KHHR) was used for the dispersion modeling. A 5-year meteorological data set from 2012 through 2016 was obtained from the SCAQMD in a preprocessed format suitable for use in AERMOD.
Urban versus rural option	Urban dispersion option was selected due to the developed nature of the project area and per SCAQMD guidelines
Terrain characteristics	The elevation of the site is 191 feet (58.2 meters) above mean sea level.
Elevation data	Digital elevation data were imported into AERMOD and elevations were assigned to receptors and emission sources, as necessary. Digital elevation data were obtained through the AERMOD View in the United States Geological Survey's National Elevation Dataset format with a resolution of 1/3 degree (approximately 10 meters), consistent with the SCAQMD guidance (SCAQMD 2018a).
Source release characterizations	The modeled source area was approximately 6 acres. An initial lateral dimension of 1 meter and a release height of 5 meters was assumed for off-road equipment and diesel trucks.

Source: Appendix B.
Note: AERMOD = American Meteorological Society/Environmental Protection Agency Regulatory Model; SCAQMD = South Coast Air Quality Management District.

Regarding receptors, the construction scenario used a 2-kilometer by 2-kilometer (1.2 mile by 1.2 mile) Cartesian receptor grid with 100-meter (330 feet) spacing to establish the impact area and evaluate locations of maximum health risk impact. The construction scenario also used discrete receptors positioned at specific locations to evaluate the maximally exposed sensitive receptor. Discrete receptors included residences located near the project site property boundary, commercial/retail land uses to the east of the project site, and the nearest school, Walteria Elementary School, which is approximately 1,180 feet northeast of the project site.

The health risk calculations were performed using the Hotspots Analysis and Reporting Program Version 2 (HARP 2) Air Dispersion and Risk Tool (ADMRT, Version 17320). AERMOD was run with all sources emitting unit emissions (1 gram per second) to obtain the necessary input values for HARP 2. The ground-level concentration plot files were then used to estimate the long-term cancer health risk to an individual, and the noncancer chronic health indices.

Cancer risk is defined as the increase in probability (chance) of an individual developing cancer due to exposure to a carcinogenic compound, typically expressed as the increased chances in one million. Maximum Individual Cancer Risk is the estimated probability of a maximally exposed individual potentially contracting cancer as a result of exposure to TACs over a period of 30 years for residential receptor locations and 25 years for off-site worker receptor locations. For the construction HRA, the TAC exposure period was assumed to be 3 years for all receptor locations (i.e., the assumed duration of project construction). While construction of the project would last approximately 2.5 years, average annual construction emissions estimated over 2.5 years were conservatively assumed to occur continuously over 3 years based on the HARP 2 input options. The exposure pathway for DPM is inhalation-only.

The SCAQMD has also established noncarcinogenic risk parameters for use in HRAs since some TACs increase non-cancer health risk due to long-term (chronic) exposures and some TACs increase non-cancer health risk due to short-term (acute) exposures. No short-term, acute relative exposure level has been established for DPM; therefore, acute impacts of DPM are not addressed in the HRA. Chronic exposure is evaluated in the construction HRA. Noncarcinogenic risks are quantified by calculating a hazard index, expressed as the ratio between the ambient pollutant concentration and its toxicity or Reference Exposure Level, which is a concentration at, or below which health effects are not likely to occur. The Chronic Hazard Index is the sum of the individual substance chronic hazard indices for all TACs affecting the same target organ system. A hazard index less of than one means that adverse health effects are not expected.

The construction HRA calculated Residential Maximum Individual Cancer Risk, Worker Maximum Individual Cancer Risk, School Maximum Individual Cancer Risk, Residential Chronic Hazard Index, Worker Chronic Hazard Index, and School Chronic Hazard Index.

5.2.3.2 IMPACT ANALYSIS

The following impact analysis addresses thresholds of significance for which the Initial Study disclosed potentially significant impacts. The applicable thresholds are identified in brackets after the impact statement.

Impact 5.2-1: The proposed project is consistent with the applicable Air Quality Management Plan. [Threshold AQ-1]

As previously discussed, the project site is located within the SoCAB under the jurisdiction of the SCAQMD, which is the local agency responsible for administration and enforcement of air quality regulations for the area. The SCAQMD has established criteria for determining consistency with the AQMP, currently the 2016 AQMP, in Chapter 12, Sections 12.2 and 12.3, in the SCAQMD CEQA Air Quality Handbook (Dudek 2019). The criteria are as follows:

- **Consistency Criterion No. 1:** The proposed project will not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay the timely attainment of air quality standards of the interim emissions reductions specified in the AQMP.
- **Consistency Criterion No. 2:** The proposed project will not exceed the assumptions in the AQMP or increments based on the year of project buildout and phase.

Consistency Criterion No. 1

Impact 5.2-2 of this DEIR evaluates the project's potential impacts in regard to CEQA Guidelines Appendix G Threshold 2. As discussed in impact 5.2-2, the project would not result in a significant and unavoidable impact associated with the violation of an air quality standard. Established standards and regulations are designed to conservatively prevent adverse impacts, and impacts within the specified thresholds would therefore not result in adverse consequences. Because the project would not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, the project would not conflict with Consistency Criterion No. 1 of the SCAQMD CEQA Air Quality Handbook.

Consistency Criterion No. 2

While striving to achieve the NAAQS for O_3 and $PM_{2.5}$ and the CAAQS for O_3, PM_{10}, and $PM_{2.5}$ through a variety of air quality control measures, the 2016 AQMP also accommodates planned growth in the SoCAB. Projects are considered consistent with and would not conflict with or obstruct implementation of the AQMP if the growth in socioeconomic factors (e.g., population, employment) is consistent with the underlying regional plans used to develop the AQMP (per Consistency Criterion No. 2 of the SCAQMD CEQA Air Quality Handbook).

The SCAQMD primarily uses demographic growth forecasts for various socioeconomic categories (e.g., population, housing, employment by industry) developed by the SCAG for its RTP/SCS (SCAG 2016), which is based on general plans for cities and counties in the SoCAB, for the development of the AQMP emissions inventory (SCAQMD 2017).[10] The SCAG 2016 RTP/SCS and associated Regional Growth Forecast are generally consistent with the local plans; therefore, the 2016 AQMP is generally consistent with local government plans. The City of Torrance General Plan (Torrance 2010) land use designation for the project development footprint is low density residential (R-LO). The project is within an area zoned as light agricultural (A-1) within the City of Torrance Property Zoning Map (Torrance 2015). The project is requesting a General Plan Amendment to low-medium density residential (R-LM). The project would not be consistent with the current zoning of the site; however, the project would preserve 18.97 acres of the 24.68-acre property as natural open space, which would not generate an increase in residential or employment population.

[10] Information necessary to produce the emission inventory for the SoCAB is obtained from the SCAQMD and other governmental agencies, including CARB, Caltrans, and SCAG. Each of these agencies is responsible for collecting data (e.g., industry growth factors, socio-economic projections, travel activity levels, emission factors, emission speciation profile, and emissions) and developing methodologies (e.g., model and demographic forecast improvements) required to generate a comprehensive emissions inventory. SCAG incorporates these data into their Travel Demand Model for estimating/projecting vehicle miles traveled and driving speeds. SCAG's socio- economic and transportation activities projections in their 2016 RTP/SCS are integrated in the 2016 AQMP (SCAQMD 2017).

Regarding population projections, as discussed in Section 3.13 of the Initial Study (see Appendix A), since the site is currently designated low density residential (R- LO), it could have a population of 582 people based on a maximum density of 9 units per acre and the estimated average household size of 2.62 persons in the City of Torrance. At full occupancy, the project is estimated to house 722 residents. This would result in an increased population of 140 people for the project site. While the projected population growth for this property is slightly higher than projected, the population in other areas of the City has grown at a lower than expected rates, and the City's overall projections account for the additional residents. For example, the U.S. Census Bureau estimates a population of 146,758 for Torrance as of July 1, 2017, and housing units of 58,585 through 2016. These estimates fall short of the City's Housing Element Update (adopted October 2013 and good through December 2021), which projected a population of 155,464 by 2020 and equates to an increase in population of 8,706 persons over the 2017 Census estimate. Since the City has entitled approximately 325 housing units since the Housing Element Update, the City's population projections would accommodate the additional 140 persons at the project site.

Therefore, the increased population at the project site would be accommodated by the City's overall population projections in the Housing Element Update. Based on these considerations, vehicle trip generation and the increase in population/housing associated with the project are accounted for in the SCAG growth projections. Because the addition of project-generated residents to the City's estimated population would not exceed the SCAG 2016 RTP/SCS forecasted population, implementation of the project would not result in a conflict with or obstruct implementation of the applicable air quality plan (i.e., SCAQMD 2016 AQMP). Accordingly, the project would meet Consistency Criterion No. 2 of the SCAQMD CEQA Air Quality Handbook.

Summary

As described in this section, the project would not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations and would not conflict with Consistency Criterion No. 1. Implementation of the project would not exceed the demographic growth forecasts in the SCAG 2016 RTP/SCS; therefore, the project would also be consistent with the SCAQMD 2016 AQMP, which based future emission estimates on the SCAG 2016 RTP/SCS. Thus, the project would not conflict with Consistency Criterion No. 2. Based on these considerations, impacts related to the project's potential to conflict with or obstruct implementation of the applicable air quality plan would be less than significant.

Impact 5.2-2: Construction activities associated with the proposed project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard. [Threshold AQ-2]

Construction of the project would result in the temporary addition of pollutants to the local airshed caused by on-site sources (i.e., off-road construction equipment, soil disturbance, and VOC off-gassing) and off-site sources (i.e., on-road haul trucks, vendor trucks, and worker vehicle trips). Construction emissions can vary substantially from day to day depending on the level of activity, the specific type of operation, dust, and the prevailing weather conditions. Therefore, such emissions levels can only be approximately estimated, with a corresponding uncertainty in precise ambient air quality impacts.

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Construction emissions were calculated for the estimated worst-case day over the construction period associated with each phase and reported as the maximum daily emissions estimated during each year of construction. Construction schedule assumptions, including phase type, duration, and sequencing, were based on information provided by the project applicant and is intended to represent a reasonable scenario based on the best information available. Default values provided in CalEEMod were used where detailed project information was not available.

Implementation of the project would generate air pollutant emissions from entrained dust, off-road equipment, vehicle emissions, architectural coatings, and asphalt pavement application. Entrained dust results from the exposure of earth surfaces to wind from the direct disturbance and movement of soil, resulting in PM_{10} and $PM_{2.5}$ emissions. There is minimal potential for native diatomaceous earth to be disturbed by project construction activities as diatomaceous earth is mainly located in Lot 2, which is comprised almost entirely of slopes and bluff-face and therefore will be largely undisturbed.

The project would implement various dust control strategies and would be required to comply with SCAQMD Rule 403 to control dust emissions generated during the grading activities, including diatomaceous earth. Proposed construction practices that would be employed to reduce fugitive dust emissions include watering of the active sites and unpaved roads three times per day depending on weather conditions and restricting vehicle speed on unpaved roads to 15 mph. Internal combustion engines used by construction equipment, vendor trucks (i.e., delivery trucks), and worker vehicles would result in emissions of VOCs, NO_X, CO, PM_{10}, and $PM_{2.5}$. The application of architectural coatings, such as exterior application/interior paint and other finishes, and application of asphalt pavement would also produce VOC emissions; however, the contractor is required to procure architectural coatings from a supplier in compliance with the requirements of SCAQMD's Rule 1113 (Architectural Coatings).

Table 5.2-8, *Estimated Maximum Daily Construction Criteria Air Pollutant Emissions*, presents the estimated maximum daily construction emissions generated during construction of the project. The values shown are the maximum daily emissions results from CalEEMod.

Table 5.2-8 Estimated Maximum Daily Construction Criteria Air Pollutant Emissions

Construction Phase	Pollutants (pounds per day)					
	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Year 1	3.60	67.75	27.49	0.16	22.52	3.67
Year 2	2.03	12.39	14.71	0.04	13.56	2.14
Year 3	30.43	11.70	16.14	0.05	17.13	2.55
10 Percent Additional Soil Excavation[1]	—	—	—	—	0.02	0.00
Maximum Daily Emissions	30.43	67.75	27.49	0.16	22.54	3.67
SCAQMD Regional Construction Thresholds	75	100	550	150	150	55
Significant?	No	No	No	No	No	No

Source: Appendix B.
Notes: VOC = volatile organic compound; NO_X = oxides of nitrogen; CO = carbon monoxide; SO_X = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; SCAQMD = South Coast Air Quality Management District.
The values shown are the maximum summer or winter daily emissions results from CalEEMod for the three years of construction. These emissions reflect CalEEMod "mitigated output", which accounts for compliance with SCAQMD Rule 1113 (Architectural Coatings) and implementation of the project's fugitive dust control strategies, including watering of the project site and unpaved roads three times per day, and restricting vehicle speed on unpaved roads to 15 mph.

Table 5.2-8 Estimated Maximum Daily Construction Criteria Air Pollutant Emissions

Construction Phase	Pollutants (pounds per day)					
	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$

[1] In addition, in order to estimate fugitive dust from excavation and movement of the additional 10 percent soil excavation buffer (i.e., 11,927 cubic yards), fugitive dust (PM_{10} and $PM_{2.5}$) was calculated using a spreadsheet model based on the CalEEMod equations for material handling. The potential 10 percent additional soil excavation would occur during the grading phase in year 1.

Maximum daily emissions of NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$ emissions would occur during the grading phase in the first year of construction as a result of off-road equipment operation and on- road vendor trucks and haul trucks. The overlap of the building construction phase and the architectural coatings phases in the final year of construction would produce the maximum daily VOC emissions. As shown in Table 5.2-8, daily construction emissions would not exceed the SCAQMD significance thresholds for VOC, NO_X, CO, SO_X, PM_{10}, or $PM_{2.5}$ during construction in all construction years. Construction-generated emissions would be temporary and would not represent a long-term source of criteria air pollutant emissions. As such, impacts would be less than significant.

Impact 5.2-3: Long-term operation of the project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard. [Threshold AQ-2]

Operation of the project would generate VOC, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$ emissions from mobile sources, including vehicle trips from future residents; area sources, including the use of consumer products, architectural coatings for repainting, and landscape maintenance equipment; and energy sources, including combustion of fuels used for space and water heating and cooking appliances. Project-generated mobile source emissions were estimated in CalEEMod based on project-specific trip rates. CalEEMod default values were used to estimate emissions from the project area and energy sources.

Table 5.2-9, *Estimated Maximum Daily Operational Criteria Air Pollutant Emissions*, presents the maximum daily area, energy, and mobile source emissions associated with operation of the project. The values shown are the maximum daily emissions results from CalEEMod.

Table 5.2-9 Estimated Maximum Daily Operational Criteria Air Pollutant Emissions

Construction Phase	Pollutants (pounds per day)					
	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Area	6.86	0.24	20.61	0.00	0.11	0.11
Energy	0.08	0.70	0.31	0.00	0.06	0.06
Mobile	3.53	16.37	45.66	0.14	10.40	2.89
Maximum Daily Emissions	10.47	17.31	66.59	0.14	10.57	3.06
SCAQMD Regional Operational Thresholds	55	55	550	150	150	55
Significant?	No	No	No	No	No	No

Source: Appendix B.
Notes: VOC = volatile organic compound; NO_X = oxides of nitrogen; CO = carbon monoxide; SO_X = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; SCAQMD = South Coast Air Quality Management District.
Totals may not sum due to rounding.
The values shown are the maximum summer or winter daily emissions results from CalEEMod. These emissions reflect CalEEMod "mitigated" output and operational year 2019.

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As shown in the table, the combined daily area, energy, and mobile source emissions would not exceed the SCAQMD operational thresholds for VOC, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$. Impacts associated with project-generated operational criteria air pollutant emissions would be less than significant.

Impact 5.2-4: The proposed project would not expose sensitive receptors to substantial criteria air pollutant and toxic air contaminant concentrations. [Threshold AQ-3]

Localized Significance Thresholds Analysis

As discussed above, sensitive receptors are those individuals more susceptible to the effects of air pollution than the population at large. Residential land uses are located to the north, east, and west of the project. The closest off-site sensitive receptors to the project site include residences located approximately 77 feet north of the project's limits of construction.

An LST analysis has been prepared to determine potential impacts to nearby sensitive receptors during construction of the project. The impacts were analyzed using methods consistent with those in SCAQMD's Final LST Methodology (2009). According to the Final LST Methodology, "off-site mobile emissions from the project should not be included in the emissions compared to the LSTs" (SCAQMD 2009). Hauling of soils and construction materials associated with the project construction are not expected to cause substantial air quality impacts to sensitive receptors along off-site roadways. Emissions from the trucks would be relatively brief in nature and would cease once the trucks pass through the main streets.

Construction activities associated with the project would result in temporary sources of on-site fugitive dust and construction equipment emissions. Off-site emissions from vendor trucks, haul trucks, and worker vehicle trips are not included in the LST analysis. The maximum allowable daily emissions that would satisfy the SCAQMD localized significance criteria for SRA 3 are presented in Table 5.2-10, *Maximum Daily Onsite Construction Emissions*, and compared to the maximum daily on-site construction emissions generated during the project.

Tables 5.2-10 Maximum Daily Onsite Construction Emissions

Construction Phase	Pollutants (pounds per day)[1, 2]			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Construction emissions	14.02	12.07	0.85	0.78
SCAQMD Screening-Level LSTs	91	664	5	3
LST exceeded?	No	No	No	No

Source: Appendix B.
Notes: NO_2 = nitrogen dioxide; CO = carbon monoxide; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; SCAQMD = South Coast Air Quality Management District; LST = localized significance threshold.
See Appendix A for complete results.
Localized significance thresholds are shown for 1-acre project sites corresponding to a distance to a sensitive receptor of 25 meters.
These estimates implementation of the project's fugitive dust control strategies, including watering of the project site and unpaved roads three times per day, and restricting vehicle speed on unpaved roads to 15 mph.
Greatest on-site NO_2, CO, PM_{10}, and $PM_{2.5}$ emissions are associated with the overlap between the parking garage building construction phase and paving phase in the first year of construction.

As shown Table 5.2-10, construction activities would not generate emissions in excess of site-specific screening-level LSTs; therefore, site-specific construction impacts during construction of the project would be less than significant. In addition, diesel equipment would also be subject to the CARB air toxic control measures for in-use off-road diesel fleets, which would further minimize DPM emissions from those shown in Table 5.2-10.

Dust Exposure

Based on a site-specific investigation performed by Geocon West, diatomaceous soils are primarily confined to Lot 2, with several minimal areas in Lot 1 where it abuts Lot 2 (Dudek 2019). In summary, the only localized area on Lot 1 (southwest corner of the proposed parking structure) where 3 to 6 feet of slough would be disturbed (excavated) as part of the grading operations would be located a substantial distance of about 512 feet from the nearest off-site receptor at 4464 Via Pinzon. The nearest receptor is also upwind of the project site, which means that the prevailing winds would typically blow potential emissions away from the residence and back toward the project site. Overall, based on the minimal potential disturbance of slough material described in the geotechnical report, as well as the distance to off-site receptors, the prevailing wind direction, and the extensive fugitive dust controls to be implemented during project construction, project construction activities would not result in the exposure of sensitive receptors to substantial concentrations of diatomaceous soils or amorphous silica.

CO Hotspots

A screening evaluation of the potential for CO hotspots was conducted based on the TIS (KHR Associates 2019) results and the Caltrans Transportation Project-Level Carbon Monoxide Protocol (CO Protocol; 1997).

The proposed project's TIS evaluated 18 intersections. As determined by the TIS using data from the City of Torrance Public Works Department, Traffic Engineering Division, the following intersections under the Cumulative Year (2019) operate at LOS E or worse during the AM or PM peak hours:

- Hawthorne Boulevard/Pacific Coast Highway (LOS E in AM and LOS F in PM)
- Crenshaw Boulevard/Rolling Hills Road (LOS F in AM)
- Crenshaw Boulevard/Pacific Coast Highway (LOS E in AM and PM)
- Hawthorne Boulevard/Palos Verdes Drive North (LOS E in AM)
- Crenshaw Boulevard/Palos Verdes Drive North (LOS F in AM and PM)
- Rolling Hills Road/Palos Verdes Drive North (LOS F in AM and PM)
- Pacific Coast Highway/Calle Mayor (LOS F in AM and PM)

For each scenario (existing with project; existing with ambient growth and the proposed project; existing with ambient growth, cumulative projects, and the proposed project), the screening evaluation presents LOS with project improvements (mitigation), whether the recommended improvements (mitigation measures) are feasible, and whether a quantitative CO hotspots analysis may be required. According to Caltrans CO Protocol, there is a cap on the number of intersections that need to be analyzed for any one project. For a single project with multiple intersections, only the three intersections representing the worst LOS ratings of the project, and, to the extent they are different intersections, the three intersections representing the highest traffic volumes, need be analyzed. For each intersection failing a screening test as described in this protocol, an additional intersection should be analyzed (Caltrans 1997).

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Based on the CO hotspot screening evaluation, the intersections that exceeded the CO hotspot screening criteria shown above all have different geometries and are signalized. Therefore, all intersections that exceeded the CO hotspot screening criteria were evaluated. The potential impact of the project on local CO levels was assessed at these intersections with the Caltrans CL4 interface based on the California LINE Source Dispersion Model (CALINE4), which allows microscale CO concentrations to be estimated along each roadway corridor or near intersections (Caltrans 1998a).

The emissions factor represents the weighted average emissions rate of the local SoCAB vehicle fleet expressed in grams per mile per vehicle. Consistent with the TIS, emissions factors for 2019 were used for the analysis. Emissions factors for 2019 were predicted by EMFAC2014 based on a 5-mph average speed for all of the intersections for approach and departure segments. The hourly traffic volume anticipated to travel on each link, in units of vehicles per hour, was based on the TIS.

Four receptor locations at each intersection were modeled to determine CO ambient concentrations. A receptor was assumed on the sidewalk at each corner of the modeled intersections, for a total of four receptors adjacent to the intersection, to represent the future possibility of extended outdoor exposure. CO concentrations were modeled at these locations to assess the maximum potential CO exposure that could occur in 2019. A receptor height of 5.9 feet (1.8 meters) was used in accordance with Caltrans recommendations for all receptor locations (Caltrans 1998b).

The SCAQMD provides projected future concentrations of CO emissions in order to assist the CEQA practitioner with a CO Hotspots Analysis. The projected future 1-hour CO background concentration of 5.1 parts per million for 2020 for the Long Beach Webster monitoring station was assumed in the CALINE4 model for 2019 (SCAQMD 2018b). The maximum CO concentration measured at the Long Beach Webster monitoring station over the last 3 years was 3.7 parts per million, which was measured in 2014; as such, the SCAQMD projected 1-hour CO ambient concentration of 5.1 parts per million is a conservative assumption. The 8-hour average CO concentration was added to the SCAQMD projected 8-hour CO ambient concentration of 3.9 parts per million for 2020 from the Long Beach Webster monitoring station to compare to the CAAQS (SCAQMD 2018b). The CALINE4 predicted CO concentrations are shown in Table 5.2-11, *CALINE Predicted Carbon Monoxide Concentrations*.

Table 5.2-11 CALINE Predicted Carbon Monoxide Concentrations

Construction Phase	Maximum Modeled Carbon Monoxide Impact (ppm) 1-hour	8-hour
Hawthorne Boulevard/Pacific Coast Highway	6.0	4.53
Crenshaw Boulevard/Rolling Hills Road	5.7	4.32
Crenshaw Boulevard/Pacific Coast Highway	6.1	4.60
Hawthorne Boulevard/Palos Verdes Drive North	5.7	4.32
Crenshaw Boulevard/Palos Verdes Drive North	5.8	4.39
Rolling Hills Road/Palos Verdes Drive North	5.6	4.25
Pacific Coast Highway/Calle Mayor	5.7	4.32
Threshold (ppm)	**20**	**9.0**
Exceeded	**N**	**N**

Source: Appendix B.

Table 5.2-11 CALINE Predicted Carbon Monoxide Concentrations

	Maximum Modeled Carbon Monoxide Impact (ppm)	
Construction Phase	1-hour	8-hour
Notes: ppm = parts per million by volume.		

As shown in the table, the maximum CO concentration predicted for the 1-hour averaging period at the studied intersections would be 6.1 ppm, which is below the 1-hour CO CAAQS of 20 ppm (CARB 2016c). The maximum predicted 8-hour CO concentration of 4.60 ppm at the studied intersections would be below the 8-hour CO CAAQS of 9.0 ppm (CARB 2016c). Neither the 1-hour nor the 8-hour CAAQS would be equaled or exceeded at any of the intersections studied. Accordingly, the project would not cause or contribute to violations of the CAAQS, and would not result in exposure of sensitive receptors to localized high concentrations of CO. As such, impacts would be less than significant to sensitive receptors with regard to potential CO hotspots resulting from project contribution to cumulative traffic-related air quality impacts.

Health Impacts of Toxic Air Contaminants

Construction Health Risk

As discussed in Section 5.2-25, an HRA was performed to estimate the Maximum Individual Cancer Risk and the Chronic Hazard Index for residential receptors, off-site worker receptors, and the nearest school as a result of project construction. Results of the construction HRA are presented in Table 5.2-12, *Construction Health Risk Assessment Results*.

Table 5.2-12 Construction Health Risk Assessment Results

Construction Phase	Units	Project Impact	CEQA Threshold	Level of Significance
Maximum Individual Cancer Risk—Residential	Per million	4.5300	10	Less than significant
Maximum Individual Cancer Risk—Worker	Per million	0.1500	10	Less than significant
Maximum Individual Cancer Risk— Walteria Elementary School	Per million	0.1200	10	Less than significant
Chronic Hazard Index—Residential	Index value	0.0020	1.0	Less than significant
Chronic Hazard Index—Worker	Index value	0.0040	1.0	Less than significant
Chronic Hazard Index— Walteria Elementary School	Index value	0.0003	1.0	Less than significant
Source: Appendix B.				

As shown in Table 5.2-12, project construction activities would result in a Residential Maximum Individual Cancer Risk of 4.53 in 1 million, a Worker Maximum Individual Cancer Risk of 0.15 in 1 million, and a School Maximum Individual Cancer Risk of 0.12 in 1 million, which are all below the significance threshold of 10 in 1 million. Project construction would also result in a Residential Chronic Hazard Index of 0.002, a Worker Chronic Hazard Index of 0.0040, and a School Chronic Hazard Index of 0.0003, which are well below the 1.0 significance threshold. The project construction TAC health risk impacts would be less than significant.

Operational Health Risk

There is an existing gasoline dispensing facility located approximately 250 feet from the northern project property line and approximately within 315 feet from the nearest residential building. The CARB Air Quality and Land Use Handbook: A Community Health Perspective (2005) recommends avoiding siting new sensitive land uses within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater), and a 50-foot separation is recommended for typical gas dispensing facilities. Based on aerial imagery (Google Earth 2016), the existing Chevron gasoline station has four pump islands (eight fuel pumps), which is not considered to be a large gasoline dispensing facility. As such, project sensitive receptors (i.e., future residents) would not be located within the recommended siting distance of 50 feet for a typical gas station.

No residual TAC emissions and corresponding cancer risk are anticipated after construction, and no long-term sources of TAC emissions are anticipated during operation of the project. Thus, the project would not result in a long-term (i.e., 9-year, 30-year, or 70-year) source of TAC emissions. Therefore, the exposure of project-related TAC emission impacts to sensitive receptors would be less than significant.

Health Impacts of Other Criteria Air Pollutants

Construction and operation of the project would not result in emissions that would exceed the SCAQMD thresholds for any criteria air pollutants including VOC, NO_X, CO, SO_X, PM_{10}, or $PM_{2.5}$, thereby protecting the health of nearby and onsite sensitive receptors. VOCs would be associated with motor vehicles, construction equipment, and architectural coatings; however, project-generated VOC emissions would not result in the exceedances of the SCAQMD thresholds as shown in Table 5.2-4. Generally, the VOCs in architectural coatings are of relatively low toxicity. Additionally, SCAQMD Rule 1113 restricts the VOC content of coatings for both construction and operational applications.

VOCs and NOx are precursors to O_3, for which the SoCAB is designated as nonattainment with respect to the NAAQS and CAAQS. The health effects associated with O_3 are generally associated with reduced lung function. The contribution of VOCs and NO_X to regional ambient O_3 concentrations is the result of complex photochemistry. The increases in O_3 concentrations in the SoCAB due to O_3 precursor emissions tend to be found downwind from the source location to allow time for the photochemical reactions to occur. However, the potential for exacerbating excessive O_3 concentrations would also depend on the time of year that the VOC emissions would occur, because exceedances of the O_3 NAAQS and CAAQS tend to occur between April and October when solar radiation is highest. The holistic effect of a single project's emissions of O_3 precursors is speculative due to the lack of quantitative methods to assess this impact. Nonetheless, the VOC and NO_X emissions associated with project construction and operation could minimally contribute to regional O_3 concentrations and the associated health impacts. Because of the minimal contribution during construction and operation, health impacts would be considered less than significant.

Construction and operation of the project would also not exceed thresholds for PM_{10} or $PM_{2.5}$ and would not contribute to exceedances of the NAAQS and CAAQS for particulate matter nor obstruct the SoCAB from coming into attainment for these pollutants. The project would also not result in substantial DPM emissions during construction and operation, and therefore would not result in significant health effects related to DPM exposure. Additionally, the project would implement dust control strategies and be required to comply with SCAQMD Rule 403, which limits the amount of fugitive dust generated during construction. Due to the minimal contribution of particulate matter during construction and operation, health impacts would be considered less than significant.

Construction and operation of the project would not contribute to exceedances of the NAAQS and CAAQS for NO_2. Health impacts that result from NO_2 and NO_X include respiratory irritation, which could be experienced by nearby receptors during the periods of heaviest use of off-road construction equipment. However, project construction would be relatively short term, and off- road construction equipment would be operating at various portions of the site and would not be concentrated in one portion of the site at any one time. In addition, existing NO_2 concentrations in the area are well below the NAAQS and CAAQS standards. Construction and operation of the project would not require use of any stationary sources (e.g., diesel generators, boilers) that would create substantial, localized NO_X impacts. Therefore, potential health impacts associated with NO_2 and NO_X would be considered less than significant.

CO tends to be a localized impact associated with congested intersections. The associated potential for CO hotspots were discussed previously and are determined to be a less-than-significant impact. Thus, the project's CO emissions would not contribute to significant health effects associated with this pollutant. In summary, construction and operation of the project would not result in exceedances of the SCAQMD significance thresholds for criteria pollutants, and potential health impacts associated with criteria air pollutants would be less than significant.

Impact 5.2-5: The proposed project would not create objectionable odors. [Threshold AQ-4]

The occurrence and severity of potential odor impacts depends on numerous factors. The nature, frequency, and intensity of the source; the wind speeds and direction; and the sensitivity of receiving location each contribute to the intensity of the impact. Although offensive odors seldom cause physical harm, they can be annoying, cause distress among the public, and generate citizen complaints.

Odors would be potentially generated from vehicles and equipment exhaust emissions during construction of the project. Potential odors produced during construction would be attributable to concentrations of unburned hydrocarbons from tailpipes of construction equipment, architectural coatings, and asphalt pavement application. Construction operations would be limited to the allowed 8 hours/day, five days a week, ongoing for 29 months. Such odors would disperse rapidly from the project site and generally occur at magnitudes that would not affect substantial numbers of people. Therefore, impacts associated with odors during construction would be less than significant.

Land uses and industrial operations associated with odor complaints include agricultural uses, wastewater treatment plants, food-processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding (Dudek 2019). The project entails operation of a residential development and would not result in the creation of a land use that is commonly associated with odors. Therefore, project operations would result in an odor impact that is less than significant.

5.2.4 Cumulative Impacts

Air pollution is largely a cumulative impact. The nonattainment status of regional pollutants is a result of past and present development. The SCAQMD develops and implements plans for future attainment of ambient air quality standards taking into account past and anticipated future projects. Based on these considerations, project-level thresholds of significance for criteria pollutants are relevant in the determination of whether a project's individual emissions would have a cumulatively significant impact on air quality.

In considering cumulative impacts from the project, the analysis must specifically evaluate a project's contribution to the cumulative increase in pollutants for which the SoCAB is designated as nonattainment for the CAAQS and NAAQS. If a project's emissions would exceed the SCAQMD significance thresholds, it would be considered to have a cumulatively considerable contribution to nonattainment status in the SoCAB. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant (SCAQMD 2003).

The SoCAB has been designated as a federal nonattainment area for O_3 and $PM_{2.5}$ and a state nonattainment area for O_3, PM_{10}, and $PM_{2.5}$. The nonattainment status is the result of cumulative emissions from various sources of air pollutants and their precursors within the SoCAB including motor vehicles, off-road equipment, and commercial and industrial facilities. Construction and operation of the project would generate VOC and NO_X emissions (which are precursors to O_3) and emissions of PM_{10} and $PM_{2.5}$. However, as indicated in Tables 5.2-8 and 5.2-9, project-generated construction and operational emissions, respectively, would not exceed the SCAQMD emission-based significance thresholds for VOC, NO_X, PM_{10}, or $PM_{2.5}$. As discussed in Impact 5.2-1, the project would not conflict with the SCAQMD 2016 AQMP.

Cumulative localized impacts would potentially occur if a construction project were to occur concurrently with another off-site project. The following cumulative projects, as presented in the TIS prepared for the project (KHR Associates 2019), were considered to investigate the cumulative impacts of surrounding project development occurring in proximity to the proposed project:

1. 3210 Sepulveda Boulevard, Torrance: 130-bed assisted living facility
2. Del Amo Senior Village, Torrance: 360-dwelling-unit independent living/assisted living/hotel
3. 21515 Hawthorne Boulevard, Torrance: commercial, 45,000-square-foot health club and 12,000-square-foot gym/restaurant
4. 23104 Hawthorne Boulevard, Torrance: 10,023-square-foot daycare for children
5. 23550 Hawthorne Boulevard, Torrance: 1,500-square-foot restaurant and 2,000-square- foot bank
6. 24000 Garnier Street, Torrance: 36,866-square-foot medical office
7. 2640 Lomita Boulevard, Torrance: commercial, 161,500-square-foot Costco with car wash and gas, which will replace previous 148,000-square-foot Costco and 75,000-square-foot medical office
8. 24444 Hawthorne Boulevard, Torrance: 2,700-square-foot office and 8-dwelling-unit residential
9. 5601 Crestridge Road, Rancho Palos Verdes (Crestridge Senior Condominium Project): 60 condominiums

10. 927 Deep Valley Drive, Rolling Hills Estates: 75 condominiums and 2,000 square feet of commercial, which will replace medical, office, and retail use
11. Peninsula Center, Rolling Hills Estates: 16,000 square feet of commercial
12. 627 Deep Valley Drive, Rolling Hills Estates: 58 condominiums and 5,810 square feet of commercial
13. 250th and Narbonne, Lomita: 20 condominiums, 2,035 square feet of commercial, and 4,281 square feet of industrial
14. 24516 Narbonne Avenue, Lomita: 22 townhomes and 700 square feet of retail
15. 25114 Narbonne Avenue, Lomita: 11 townhomes and 3,500 square feet of retail
16. 1730–1734 Pacific Coast Highway, Lomita: 850 square feet of commercial and 180 square feet of retail
17. 24601 Hawthorne Boulevard, Torrance: 11 dwelling units and 2,525-square-foot commercial office space

Notably, the construction schedules for the cumulative projects listed above are currently unknown; therefore, potential construction impacts associated with two or more simultaneous projects would be considered speculative.[11] However, for disclosure, localized emissions of the nearest project (#17 in the list above, the mixed-use development at 24601 Hawthorne Boulevard/northwest corner of Hawthorne/Via Valmonte intersection) was considered in conjunction with the proposed project and the SCAQMD screening-level LSTs to gauge whether there is a possibility of potential localized impacts if construction of the projects were to overlap. The localized emissions associated with construction of the proposed project are discussed in detail in Impact 5.2-4, and the localized emissions of the nearest off-site project are detailed in the Air Quality and Greenhouse Gas Emissions technical memorandum for the 24601 Hawthorne Boulevard Mixed Use Development Project (LSA). In summary, the proposed project and the nearest off-site project would individually result in localized emissions substantially below the SCAQMD screening-level LSTs, and if the maximum emissions would occur concurrently, would not result in potentially significant localized emissions. Additionally, criteria air pollutant emissions associated with construction activity of future projects would be reduced through implementation of control measures required by the SCAQMD. Cumulative PM_{10} and $PM_{2.5}$ emissions would be reduced because all future projects would be subject to SCAQMD Rule 403 (Fugitive Dust), which sets forth general and specific requirements for all construction sites in the SCAQMD. The Health Risk Assessment conducted for the proposed project found there would be no significant impact. In the unlikely event that projects in local proximity were to be constructed at the same time and of similar intensity of the proposed project, the combined less than significant impacts from each project would not create a significant impact, and any additional project development would incorporate SCAQMD thresholds to comply with all standards and regulations.

Based on the previous considerations, the project would not result in a cumulatively considerable increase in emissions of nonattainment pollutants. Impacts would be less than significant.

[11] The CEQA Guidelines state that if a particular impact is too speculative for evaluation, the agency should note its conclusion and terminate discussion of the impact (14 CCR 15145). This discussion is nonetheless provided in an effort to show good-faith analysis and comply with CEQA's information disclosure requirements.

5.2.5 Existing Regulations and Standard Conditions

This analysis assumes compliance with all applicable laws as follows.

State

- Clean Car Standards – Pavley (AB 1493)
- California Advanced Clean Cars CARB (Title 13 CCR)
- Low-Emission Vehicle Program – LEV III (Title 13 CCR)
- Statewide Retail Provider Emissions Performance Standards (SB 1368).
- Airborne Toxics Control Measure to Limit School Bus Idling and Idling at Schools (13 CCR 2480)
- Airborne Toxic Control Measure to Limit Diesel-Fuel Commercial Vehicle Idling (13 CCR 2485)
- In-Use Off-Road Diesel Idling Restriction (13 CCR 2449)
- Building Energy Efficiency Standards (Title 24, Part 6)
- California Green Building Code (Title 24, Part 11)
- Appliance Energy Efficiency Standards (Title 20)

SCAQMD

- SCAQMD Rule 201: Permit to Construct
- SCAQMD Rule 402: Nuisance Odors
- SCAQMD Rule 403: Fugitive Dust
- SCAQMD Rule 445: Wood-Burning Devices
- SCAQMD Rule 1113: Architectural Coatings
- SCAQMD Rule 1186: Street Sweeping
- SCAQMD Rule 1401: New Source Review of Toxic Air Contaminants
- SCAQMD Rule 1403: Asbestos Emissions from Demolition/Renovation Activities

5.2.6 Level of Significance Before Mitigation

Upon implementation of regulatory requirements and standard conditions of approval, these impacts would be less than significant: 5.2-1, 5.2-2, 5.2-3, 5.2-4, and 5.2-5.

5.2.7 Mitigation Measures

No mitigation measures are required.

5.2.8 Level of Significance After Mitigation

Impacts would be less than significant.

5.2.9 References

California Department of Transportation (Caltrans). 1997. Transportation Project-Level Carbon Monoxide Protocol. Caltrans Institute of Transportation Studies.

———. 1998a. User's Guide for CL4: A User-Friendly Interface for the CALINE 4 Model for Transportation Project Impact Assessments. User's Guide STI-997480-1814-UG. Prepared by D.L. Coe, D.S. Eisinger, and J.D. Prouty (Sonoma Technology Inc.) and T. Kear (Caltrans–UC Davis Air Quality Project) for Caltrans–UC Davis Air Quality Project. June 1998.

———. 1998b. Technical Noise Supplement: A Technical Supplement to the Traffic Noise Analysis Protocol. Prepared by R. Hendriks. Noise, Air Quality, and Hazardous Waste Management Office; Environmental Engineering; Caltrans. October 1998. http://www.dot.ca.gov/hq/env/noise/pub/Technical%20Noise%20Supplement.pdf.

California Air Pollution Control Officers Association (CAPCOA). 2010, August. Quantifying Greenhouse Gas Mitigation Measures: A Resource for Local Government to Assess Emission Reductions from Greenhouse Gas Mitigation Measures.

———. 2017. California Emissions Estimator Model (CalEEMod) User's Guide Version 2016.3.2. Prepared by Trinity Consultants and the California Air Districts. November 2017. http://www.caleemod.com/.

California Air Resources Board (CARB). 2000. Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles. October 2000. Accessed August 2016. http://www.arb.ca.gov/diesel/documents/rrpfinal.pdf.

———. 2005. Air Quality and Land Use Handbook: A Community Health Perspective. April 2005. Accessed August 2016. http://www.arb.ca.gov/ch/landuse.htm.

———. 2016a. "Glossary of Air Pollution Terms." CARB website. Accessed June 2016. http://www.arb.ca.gov/html/gloss.htm.

———. 2016b, April 12. "Overview: Diesel Exhaust and Health." Accessed December 2016. https://www.arb.ca.gov/research/diesel/diesel-health.htm.

———. 2016c, May 4. "Ambient Air Quality Standards." Accessed August 2016. http://www.arb.ca.gov/research/aaqs/aaqs2.pdf.

———. 2016d. "Area Designation Maps/State and National." Last updated May 5, 2016. http://www.arb.ca.gov/desig/adm/adm.htm.

Dudek. 2019, March. Air Quality and Greenhouse Gas Emissions Analysis Technical Report for the Solana Torrance Project.

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AIR QUALITY

Geocon West Inc. (Geocon). 2018, June 11. Suggested Contingency Factor for Estimation of Soil Excavation Quantity during Grading – Proposed Multi-Family Residential Development Vesting Tentative Tract Map 74148, Lot 1 Hawthorne Boulevard and Via Valmonte, Torrance, California.

Google Earth. 2016, May. Aerial imagery.

KHR Associates (KHR). 2019, February 28. Traffic Impact Study, Solana Torrance, Torrance, California.

Office of Environmental Health Hazard Assessment (OEHHA). 2015, February. Air Toxics Hot Spots Program. Risk Assessment Guidelines. Guidance Manual for Preparation of Health Risk Assessments. http://oehha.ca.gov/air/hot_spots/2015/2015GuidanceManual.pdf.

Southern California Association of Governments (SCAG). 2008. 2008 Regional Comprehensive Plan: Helping Communities Achieve a Sustainable Future.

———. 2016, April 7. 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy. Accessed March 2017. http://scagrtpscs.net/Pages/FINAL2016RTPSCS.aspx.

South Coast Air Quality Management District (SCAQMD). 2003, August. White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution, Appendix D. Accessed June 2018. http://www.aqmd.gov/docs/default-source/Agendas/Environmental-Justice/cumulative-impacts-working-group/cumulative-impacts-white-paper-appendix.pdf.

———. 2009. Final Localized Significance Threshold Methodology. Revised July 2009.

———. 2011. "Fact Sheet for Applying CalEEMod to Localized Significance Thresholds." Accessed August 2016. http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/caleemod-guidance.pdf?sfvrsn=2.

———. 2013, February. Final 2012 Air Quality Management Plan. Accessed January 2019. https://www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan.

———. 2017, March 16. Final 2016 Air Quality Management Plan. Accessed March 2017. http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/final2016aqmp.pdf?sfvrsn=15.

———. 2018a. "SCAQMD Modeling Guidance for AERMOD." https://www.aqmd.gov/home/air-quality/air-quality-data-studies/meteorological-data/modeling-guidance.

———. 2018b. "Air Quality Analysis Handbook – Future CO Concentrations." Originally published in CEQA Air Quality Handbook. http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook.

Torrance, City of. 1996. Hawthorne Boulevard Corridor Specific Plan. Adopted July 23, 1996.

———. 2009, July. Air Quality. Section 5.2 of City of Torrance General Plan Update Draft EIR. Accessed August 2016.

———. 2010. City of Torrance General Plan. Land Use Element and Community Resources Element. Adopted April 6, 2010. Accessed July 2016. https://www.torranceca.gov/our-city/community-development/general-plan/plan-2009.

———. 2015. City of Torrance Property Zoning Map. Adopted July 2015. Accessed July 2016. http://www.torranceca.gov/PDF/Zoning2015.pdf.

United States Environmental Protection Agency (EPA). 2013. Integrated Science Assessment of Ozone and Related Photochemical Oxidants. U.S. EPA, EPA/600R-10/076F, 2013.

———. 2016a, July 21. "Criteria Air Pollutants." Accessed August 2016. https://www.epa.gov/criteria-air-pollutants.

———. 2016b. Integrated Science Assessment for Oxides of Nitrogen–Health Criteria (2016 Final Report). EPA/600/R-15/068.

———. 2016c, April 27. "EPA Region 9 Air Quality Maps and Geographic Information." Accessed August 2016. http://www.epa.gov/region9/air/maps/.

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