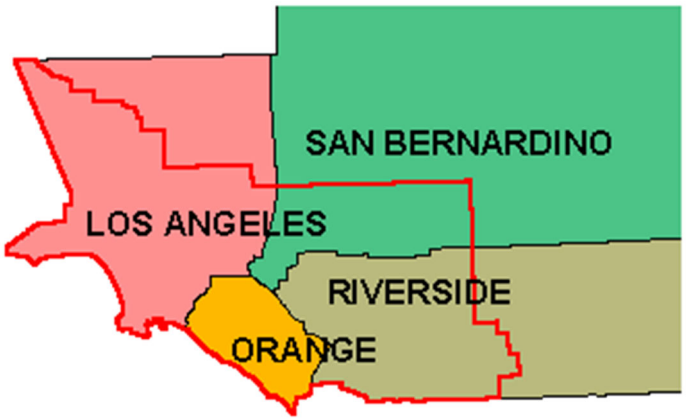
3.2 AIR QUALITY

This section of the Environmental Impact Report (EIR) describes the existing air quality conditions in the South Coast Air Basin (Basin) – which encompasses most of Los Angeles County, including Redondo Beach, Torrance, and the Project site – and evaluates the potential impacts of the proposed Beach Cities Health District (BCHD) Healthy Living Campus Master Plan Project (Project). This discussion includes an assessment of both short-term construction and long-term operational air emissions generated by the proposed Project – including the Phase 1 preliminary site development plan and the more general Phase 2 development program. Information for this section was derived from the U.S. Environmental Protection Agency (USEPA), California Air Resources Board (CARB), and South Coast Air Quality Management District (SCAQMD). Air Quality modeling was prepared using the California Emission Estimator Model (CalEEMod) Version 2016.3.2 (see Appendix B). An analysis of greenhouse gas (GHG) emissions and associated impacts is included in Section 3.7, *Greenhouse Gas Emissions and Climate Change*.

3.2.1 Environmental Setting

3.2.1.1 Location and Climate

The South Coast Air Basin is bounded by the Pacific Ocean to the west, and the San Gabriel, San Fernando, and San Jacinto Mountains to the north and east. The topography defining the Basin traps air in the valleys below, making the Basin an area of high air pollution potential.



The South Coast Air Basin includes Orange County and the non-desert portions of Los Angeles, San Bernardino, and Riverside counties.

Redondo Beach and Torrance have a Mediterranean coastal climate with warm, dry summers and mild, cool winters. The average annual temperature recorded at Torrance Municipal Airport is 62.6 degrees Fahrenheit (°F), with a monthly average maximum temperature of 77.8 °F in August and a monthly average minimum temperature of 46.2 °F in December. The average annual rainfall in the region is approximately 14.45 inches per year, with the majority of

annual rainfall occurring between December and March (National Climatic Data Center [NCDC] 2010).

The Basin frequently experiences weather conditions that trap air pollutants within the Basin. First, the Basin has persistent temperature inversions formed by warmer air in the upper layer and cooler air in the lower layer. Temperature inversions limit the vertical dispersion of air contaminants, holding them relatively near the ground. These inversions break when the sun heats the lower layer, allowing the two layers to mix and the previously trapped air to leave the Basin. Second, the Basin experiences periods of stagnant wind conditions, which also limit the movement of air pollutants. The combination of stagnant wind conditions and low temperature inversions produces the greatest pollutant concentrations, typically from June through September. Conversely, on days with no inversion (i.e., days with high wind speeds) air pollutant concentrations are the lowest. However, pollutant concentrations in the Basin also vary with location. Concentrations of ozone (O_3), for example, tend to be lower along the coast (i.e., within the vicinity of the Project site) and higher in the near inland valleys.

3.2.1.2 Air Pollutants

Air pollutant emissions within the Basin are generated from several stationary, mobile, and natural sources, ranging from large power plants and manufacturing facilities to residential water heaters and consumer products. Stationary sources can be divided into two major subcategories: point and area sources. Point sources occur at an identified location and are usually associated with industry and manufacturing. Examples include boilers or combustion equipment that produce electricity or generate heat. Area sources are more widely distributed. Examples of area sources include residential and commercial water heaters, painting operations, lawn mowers, agricultural fields, landfills, and consumer products. Mobile sources, including motor vehicles, aircraft, trains, and construction equipment, account for most of the air pollutant emissions within the Basin. Construction activities that disturb the ground surface (e.g., excavation and grading) contribute to fugitive dust emissions within the Basin. Fugitive dust can also be generated naturally when strong winds pull fine dust particles off the ground surface into the air.

To protect the public health and welfare, the Federal and State governments have identified and regulate criteria air pollutants and certain air toxics. In California, these pollutants are regulated through the Federal Clean Air Act (CAA), which established the National Ambient Air Quality Standards (NAAQS), and the California Clean Air Act (CCAA), which established the more restrictive California Ambient Air Quality Standards (CAAQS) (see Table 3.2-1). The air pollutants for which both Federal and State standards have been promulgated and which are most

relevant to air quality planning and regulation in the air basin are ozone (O_3), carbon monoxide (CO), respirable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead (Pb). Toxic air contaminants (TACs), discussed below, are of particular concern in the Basin and are regulated separately from criteria air pollutants. The CAAQS regulate additional air pollutants that are not currently regulated by the NAAQS, including hydrogen sulfide (H_2S), vinyl chloride, and sulfates. These pollutants are described below (refer to Table 3.2-1 for Federal and State ambient air quality standards):

Ozone (O_3)

O_3 is a gas that is produced by a photochemical reaction (triggered by sunlight) between nitrogen oxides (NO_x) and volatile organic compounds (VOCs). NO_x and VOCs are also commonly referred to as reactive organic gases (ROGs). NO_x is formed during the combustion of fuels, while VOCs are formed during combustion and evaporation of organic solvents. Conditions that produce high concentrations of O_3 are direct sunshine, stagnation in source areas, high ground surface temperatures, and a strong inversion layer that restricts vertical mixing. O_3 concentrations are generally highest during the summer months when direct sunlight, light wind, and warm temperature conditions are favorable.

O_3 is a pungent, colorless, toxic gas with direct health effects on humans including respiratory and eye irritation and possible changes in lung functions. Children, the elderly, people with respiratory disorders, and people who exercise strenuously outdoors are the most sensitive to O_3.

Carbon Monoxide (CO)

CO is a colorless, odorless gas produced by the incomplete combustion of fuels. CO concentrations tend to be the highest near congested transportation corridors and intersections, especially during winter mornings with little to no wind, when surface-based inversions trap the pollutant at ground levels.

The health effects of CO are related to its affinity for hemoglobin in the blood. At high concentrations, CO reduces the amount of oxygen in the blood, causing heart difficulties in people with chronic diseases, reduced lung capacity, and impaired mental abilities. Those most at risk are fetuses, patients with diseases involving heart and blood vessels, and patients with chronic hypoxemia (i.e., oxygen deficiency, as seen at high altitudes).

Respirable Particulate Matter (PM_{10}) and Fine Particulate Matter ($PM_{2.5}$)

PM_{10} and $PM_{2.5}$ consist of extremely small, suspended particles with diameters less than 10 microns and less than 2.5 microns, respectively. PM_{10} generally comes from fugitive dust (windblown dust and dust generated from mobile sources), while $PM_{2.5}$ is generally associated with combustion processes, it is also formed in the atmosphere as a secondary pollutant through chemical reactions. Most particulate matter in urban areas is produced by fuel combustion, motor vehicle travel, and construction activities.

Fugitive dust can be controlled by applying water or other soil stabilizers to exposed soil surfaces daily during construction activities to avoid windblown dust.

Children, the elderly, and people with pre-existing respiratory or cardiovascular disease appear to be more susceptible to the effects of high levels of PM_{10} and $PM_{2.5}$. Potential impacts of elevated levels of PM_{10} and $PM_{2.5}$ include increased mortality rates, respiratory infections, number and severity of asthma attacks, and number of hospital admissions. Daily fluctuations in $PM_{2.5}$ concentration levels have been related to hospital admissions for acute respiratory conditions in children, school absences, decreases in respiratory lung volumes in normal children, and increased medication use in children and adults with asthma. Recent studies show the development of lung function in children is reduced with long-term exposure to particulate matter.

Nitrogen Dioxide (NO_2)

NO_2 is a reddish-brown toxic gas with a characteristic sharp, biting odor and is a prominent air pollutant resulting from nitrogen oxides emitted primarily by motor vehicles, making it a strong indicator of vehicle emissions. Population-based studies suggest that an increase in acute respiratory illness, including infections and respiratory symptoms in children (not infants), is associated with long-term exposure to NO_2 at levels found in homes with gas stoves, which are higher than ambient levels found in Southern California. Increase in resistance to air flow and airway contraction is observed after short-term exposure to NO_2 in healthy subjects. Larger decreases in lung functions are observed in individuals with asthma or chronic obstructive

pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these sub-groups.

Sulfur Dioxide (SO_2)

SO_2 is a colorless, extremely irritating gas or liquid. The largest sources of SO_2 are fossil fuel combustion at power plants and other industrial facilities. Smaller sources of SO_2 emissions include industrial processes such as extracting metal from ore, and the burning of high sulfur containing fuels by locomotives, large ships, and non-road equipment.

SO_2 is linked with adverse effects on the respiratory system. Asthmatics are particularly sensitive to SO_2, with only a few minutes of exposure to low levels of the gas potentially resulting in airway constriction.

Lead (Pb)

Pb occurs in the atmosphere as particulate matter. The combustion of leaded gasoline is the primary source of airborne lead in the Basin. The use of leaded gasoline is no longer permitted for on-road motor vehicles; therefore, most Pb combustion emissions are associated with aircraft, and some racing and off-road vehicles. Substantial Pb emissions also occur in the manufacturing and recycling of batteries, paint, ink, ceramics, ammunition, and secondary lead smelters. Despite these sources, Pb emissions in the U.S. decreased by 99 percent from 1980 to 2015 (USEPA 2016).

Fetuses, infants, and children are more sensitive than others to the adverse effects of Pb exposure. Exposure to low levels of Pb can adversely affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotient. In adults, increased levels of lead are associated with increased blood pressure. Pb poisoning can cause anemia, lethargy, seizures, and death.

Toxic Air Contaminants (TACs)

TACs are a diverse group of air pollutants including both organic and inorganic chemical substances that may be emitted from a variety of common sources including gasoline stations, heavy duty trucks, motor vehicles, construction equipment, and industrial operations. TACs are different than criteria pollutants in that ambient air quality standards have not been established for TACs, largely because there are hundreds of air toxics and their effects on health tend to be local rather than regional. CARB has designated nearly 200 compounds as TACs. Additionally, CARB has implemented control measures for many compounds that pose high risks and show potential for effective control.

TACs can cause chronic and acute adverse effects on human health. These health impacts include increased risk of cancer due to continual inhalation of toxic air pollutants. Most of the estimated health risks from TACs can be attributed to relatively few compounds, the most important being particulate matter from diesel-fueled engines (i.e., diesel particulate matter [DPM]).

Volatile Organic Compounds (VOCs)

VOCs are organic chemicals that have a high vapor pressure at ordinary room temperature and include any compound of carbon, excluding CO, carbon dioxide (CO_2), carbonic acid (H_2CO_3), metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions. The high vapor pressure of VOCs results from a low boiling point, which causes large numbers of molecules to evaporate or sublimate from the liquid or solid form of the compound and enter the surrounding air. For example, formaldehyde, which evaporates from paint, has a boiling point of only -2 °F.

VOCs are numerous, varied and ubiquitous, and include both human-made and naturally occurring chemical compounds. Most scents or odors are of VOCs. Some VOCs are dangerous to human health or cause harm to the environment. Anthropogenic VOCs are regulated by law, especially indoors, where concentrations are the highest. Harmful VOCs typically are not acutely toxic, but have compounding long-term health effects.

Odors

Odors are not regulated under the Federal CAA or CCAA; however, they are considered under the California Environmental Quality Act (CEQA). Odors can potentially affect human health in several ways. Odorant compounds can irritate the eye, nose, and throat, which can reduce respiratory volume. Additionally, VOCs that cause odors can stimulate sensory nerves to cause neurochemical changes that might influence health, for instance, by compromising the immune system.

According to the SCAQMD CEQA Air Quality Handbook (1993), land uses associated with odor complaints typically include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. Major sources within Redondo Beach and Torrance include the AES Redondo Beach Power Plant. Other sources of odors may include odors from commercial kitchens, particularly those with outdoor grilling or wood burning ovens, as well as short term odors generated by construction activities such as painting and asphalt paving.

Table 3.2-1. Federal and State Ambient Air Quality Standards for Criteria Pollutants

Criteria Pollutant	Averaging Time	California Standards		National Standards
		Concentration	Primary	Secondary
Ozone (O_3)	1-Hour	0.09 ppm (180 µg/m^3)	-	-
	8-Hour	0.07 ppm (137 µg/m^3)	0.07 ppm (137 µg/m^3)	Same as Primary Standard
Respirable Particulate Matter (PM_{10})	24-Hour	50 µg/m^3	150 µg/m^3	Same as Primary Standard
	Annual Arithmetic Mean	20 µg/m^3	-	
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	-	35 µg/m^3	Same as Primary Standard
	Annual Arithmetic Mean	12 µg/m^3	12 µg/m^3	15 µg/m^3
Carbon Monoxide (CO)	1-Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	-
	8-Hour	9 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	-
Nitrogen Dioxide (NO_2)	1-Hour	0.18 ppm (339 µg/m^3)	100 ppb (188 µg/m^3)	-
	Annual Arithmetic Mean	0.03 ppm (57 µg/m^3)	0.53 ppb (100 µg/m^3)	Same as Primary Standard
Sulfur Dioxide (SO_2)	1-Hour	0.25 ppm (655 µg/m^3)	75 ppb (196 µg/m^3)	-
	3-Hour	-	-	0.5 ppm (1,300 µg/m^3)
	24-Hour	0.04 ppm (105 µg/m^3)	-	-
Lead	30 Day Average	1.5 µg/m^3	-	-
	Rolling 3-Month Average	-	0.15 µg/m^3	Same as Primary Standard
Sulfates	24-Hour	25 µg/m^3	-	-
Hydrogen Sulfide (H_2S)	1-Hour	0.03 ppm (42 µg/m^3)	-	-
Vinyl Chloride	24-Hour	0.01 ppm (26 µg/m^3)	-	-

Notes: ppm = parts per million; µg/m^3 = micrograms (one-millionth of a gram) per cubic meter of air.
Sources: CARB 2016.

3.2.1.3 Regional Air Quality

Measurements of ambient concentrations of criteria pollutants are used by the USEPA and CARB to assess and classify the air quality of each air basin, county, or, in some cases, a specific

developed area. The classification is determined by comparing monitoring data with Federal and State air quality standards. If a pollutant concentration in an area is lower than the standard, the area is classified as being in *"attainment."* If the pollutant exceeds the standard, the area is described as being in marginal, moderate, serious, severe, or extreme *"nonattainment,"* depending on the magnitude of the air quality standard exceedance. In order to reach attainment again, the NAAQS may not be exceeded more than once per year. A nonattainment area can reach attainment when the NAAQS have been met for a period of 10 consecutive years. During this time period, the area is in *"maintenance."* If there is not enough data available to determine whether the standard is exceeded in an area, the area is designated as *"unclassified."*

The entire Basin is designated as a Federal and/or State nonattainment area for O_3, $PM_{2.5}$, and PM_{10}. At the Federal level, the Basin is designated as a nonattainment area for O_3, Pb, and $PM_{2.5}$. The Basin is in attainment of federal standards for SO_2 and NO_2, a subcategory of NO_x. At the State level, the Basin, including the Los Angeles County portion of the Basin, is also designated as a nonattainment area for O_3, $PM_{2.5}$, and PM_{10}. The Basin is in attainment for the State ambient air quality standards for CO, NO_2, and SO_2, and the Los Angeles County portion of the Basin is designated as attainment for Pb (CARB 2019a; USEPA 2019a).

Table 3.2-2. Los Angeles County-South Coast Air Basin Federal and State Attainment Status for Criteria Pollutants

Criteria Pollutant		Federal Designation	State Designation
Ozone (O_3)	1-hour	Extreme Nonattainment	Nonattainment
	8-hour	Extreme Nonattainment	Nonattainment
Particulate Matter (PM_{10})	24-hour	Attainment as Serious Maintenance Area	Nonattainment
	Annual		
Particulate Matter ($PM_{2.5}$)	24-hour	Serious Nonattainment	Nonattainment
	Annual		
Carbon Monoxide (CO)	1-hour	Attainment as Serious Maintenance Area	Attainment
	8-hour		
Nitrogen Dioxide (NO_2)	1-hour	Attainment	Attainment
	Annual	-	-
Sulfur Dioxide (SO_2)	1-hour	Attainment	Attainment
	24-hour		
Lead (Pb)	30 day rolling average	-	Attainment
	3 month rolling average	Nonattainment	-
Sulfates		-	Attainment
Hydrogen Sulfide (H_2S)		-	Attainment
Vinyl Chloride		-	Attainment

Sources: CARB 2019a; USEPA 2019a.

In an effort to monitor the various concentrations of air pollutants throughout the Basin, the SCAQMD operates 37 permanent monitoring stations and four single-pollutant source impact Pb air monitoring sites in the Basin and a portion of the Salton Sea Air Basin in Coachella Valley (i.e., Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties). The SCAQMD has divided the region into 38 source receptor areas (SRAs). Redondo Beach and Torrance – including the Project site – are located within SRA 3, which covers southwestern coastal Los Angeles County. Ambient air pollutant concentrations within SRA 3 are monitored at the 7201 West Westchester Parkway Monitoring Station, which is located approximately 7.57 miles north of the Project site. Of the six criteria air pollutants, ambient concentrations of CO, O_3, NO_2, SO_2, and PM_{10} are monitored in SRA 3. Measurements for $PM_{2.5}$ are taken in SRA 4 at the South Long Beach 1305 East Pacific Coast Highway Monitoring Station. Table 3.2-3 provides a summary of ambient air quality measured within SRA 3 and 4 from 2015 to 2019 for all pollutants.[1] Since 2015, exceedances have occurred for the Federal and State 8-hour standards for O_3, the State 1-hour O_3 standard, the Federal 24-hour $PM_{2.5}$ standard, and the annual average standard for PM_{10}.

3.2.1.4 CO Hotspots

Motor vehicles are the primary source of criteria pollutants in the vicinity of the Project site. Traffic-congested roadways and intersections have the potential to generate localized high levels of CO. Localized areas where ambient concentrations exceed Federal and/or State standards for CO are termed "CO hotspots." Section 9.14 of the SCAQMD CEQA Air Quality Handbook (1993) identifies CO as a *"localized problem requiring additional analysis when a project is likely to subject sensitive receptors to CO hotspots."* In the past, the SCAQMD recommended that a CO hotspot analysis should be conducted for intersections where a proposed project would have a significant traffic-related congestion impact causing the Level of Service (LOS) to change to E or F or when a project increases the volume to capacity ratio (V/C) increases by 2 percent and the LOS is D or worse. These recommendations were formulated several years ago when the Basin was a nonattainment area for Federal and State CO standards. The Basin is now in attainment of all applicable ambient CO standards – in 2019, the maximum 8-hour concentration of CO measured within SRA 3 was 1.3 parts per million (ppm) (refer to Table 3.2-3), which is well below the 9.0 Federal and State 8-hour standard (refer to Table 3.2-1).

[1]It should be noted that the closest SCAQMD monitoring stations are located at Los Angeles International Airport and Long Beach near major sources of criteria air pollutants. Redondo Beach and Torrance do not contain any major sources of criteria air pollutants; instead, air pollutant levels are affected mostly by large regional sources outside of the city limits.

Table 3.2-3. Exceedances of Ambient Air Quality Standards for Criteria Pollutants

Criteria Pollutant / Standards	Number of Days Threshold Was Exceeded and Maximum Levels During Violations				
	2015	2016	2017	2018	2019
Ozone (O_3)					
State 1-Hour Standard: > 0.09 ppm	1 day	0 days	0 days	0 days	0 days
State 8-Hour Standard: > 0.070 ppm	3 days	3 days	0 days	0 days	0 days
Federal 8-Hour Standard: > 0.070 ppm	3 days	2 days	0 days	0 days	0 days
Max. 1-Hour Conc. (ppm)	0.096 ppm	0.087 ppm	0.086 ppm	0.074 ppm	0.082 ppm
Max. 8-Hour Conc. (ppm)	0.077 ppm	0.080 ppm	0.070 ppm	0.065 ppm	0.067 ppm
Carbon Monoxide (CO)					
State 8-Hour Standard: > 9.0 ppm	0 days	0 days	0 days	0 days	0 days
Federal 8-Hour Standard: > 9.0 ppm	0 days	0 days	0 days	0 days	0 days
Max. 8-Hour Conc. (ppm)	1.4 ppm	1.3 ppm	1.6 ppm	1.5 ppm	1.3 ppm
Max. 1-Hour Conc. (ppm)	1.7 ppm	1.6 ppm	2.1 ppm	1.8 ppm	1.8 ppm
Nitrogen Dioxide (NO_2)					
State 1-Hour Standard: > 0.18 ppm	0 days	0 days	0 days	0 days	0 days
Annual Average (ppm)	0.11 ppm	0.10 ppm	0.09 ppm	0.09 ppm	0.10 ppm
Max. 1-Hour Conc. (ppm)	0.09 ppm	0.08 ppm	0.07 ppm	0.06 ppm	0.06 ppm
Sulfur Dioxide (SO_2)					
State 1-Hour Standard: > 0.25 ppm	0 days	0 days	0 days	0 days	0 days
State 24-Hour Standard: > 0.04 ppm	0 days	0 days	0 days	0 days	0 days
Max. 24-Hour Conc. (ppm)	0 days	0 days	0 days	0 days	0.001 ppm
Max. 1-Hour Conc. (ppm)	0.015 ppm	0.010 ppm	0.010 ppm	0.012 ppm	0.004 ppm
Respirable Particulates (PM_{10})					
State 24-Hour Standard: > 50 µg/m^3	0 days	0 days	0 days	0 days	2 days
Federal 24-Hour Standard: > 150 µg/m^3	0 days	0 days	0 days	0 days	0 days
Max. 24-Hour Conc. (µg/m^3)	42.0 µg/m^3	43.0 µg/m^3	46.0 µg/m^3	45.0 µg/m^3	62.0 µg/m^3
Annual Average Standard: 20 (µg/m^3)	21.2 µg/m^3	21.6 µg/m^3	19.8 µg/m^3	20.5 µg/m^3	19.2 µg/m^3
Fine Particulates ($PM_{2.5}$)					
Federal 24-Hour Standard: > 35 µg/m^3	3 days	0 days	4 days	2 days	0 days
Max. 24-Hour Conc. (µg/m^3)	54.6 µg/m^3	29.4 µg/m^3	55.3 µg/m^3	46.4 µg/m^3	29.0 µg/m^3
Annual Average (µg/m^3)	10.8 µg/m^3	10.4 µg/m^3	10.9 µg/m^3	11.0 µg/m^3	9.23 µg/m^3

Notes: Ambient concentrations for CO, O_3, NO_2, SO_2, and PM_{10} were measured at the Southwest Coastal Los Angeles County monitoring station (SRA 3). Ambient concentrations of $PM_{2.5}$, were measured at the South Coastal Los Angeles County monitoring station (SRA 4).
Source: CARB 2019b; SCAQMD 2019a.

3.2.1.5 Sensitive Receptors

Sensitive receptors are populations that are more susceptible to the effects of air pollution than is the population at large. According to CARB, sensitive receptors include children less than 14 years of age, the elderly over 65 years of age, athletes, and people with cardiovascular and chronic respiratory diseases. The Federal and State ambient air quality standards are designed to protect public health and are generally regarded as conservative for healthy adults because there is greater concern to protect adults who are ill or have long-term respiratory problems, and young children whose lungs are not fully developed. The SCAQMD identifies the following as locations that may contain a high concentration of sensitive receptors; long-term health care facilities, rehabilitation centers, convalescent centers, retirement homes, residences, schools, playgrounds and parks with active recreational uses, childcare centers, and athletic facilities.

The majority of development within Redondo Beach and Torrance consists of residential uses, including large single-family neighborhoods and multiple-family apartments and condominiums (see Section 3.10, *Land Use and Planning*), all of which are considered sensitive land uses with regard to air quality. Residential uses occur to the north, south, east, and west of the Project site as close as 80 feet to the Project site (i.e., to the extent of proposed construction activities). The following 11 schools within 0.5 miles (2,640 feet) of the Project site: Beach Cities Child Development Center (preschool), Towers Elementary School, Beryl Heights Elementary School, Redondo Shores High School, Redondo Beach Learning Academy, Redondo Union High School, Jefferson Elementary School, Parras Middle School, Our Lady of Guadalupe School, Valor Christian Academy, and West High School. There are also many public parks in the vicinity, including Dominguez Park, Sunnyglen Park, Entradero Park (see Table 3.2-4). The existing 60 Memory Care units associated with the Silverado Beach Cities Memory Care Community on the Project site also would also be sensitive to construction emissions during construction activities associated with the Phase 1 preliminary site development plan.

Table 3.2-4. Sensitive Receptors in the Vicinity of the Project Site

Sensitive Receptors	Distance to the Project Site / Extent of Construction Activities (feet)
Residential Uses	
Silverado Beach Cities Memory Care Community (located on the BCHD campus)	0
West Torrance Residences (located east of the Project site)	80
Redondo Beach Residences (located north of the Project site)	80
Redondo Beach Residences (located west and south of the Project site)	110
Recreational Land Uses	
Dominguez Park/Redondo Beach Dog Park	115
Sunnyglen Park	1,190
Entradero Park	1,390
Perry Allison Playfield	1,575
Sea Hawk Stadium	1,815
Moondust Parkette	2,590
Edith Rodaway Friendship Park	2,640
Schools	
Beach Cities Child Development Center (preschool located on the BCHD campus)	0
Towers Elementary School	350
Beryl Heights Elementary School	905
Redondo Shores High School	1,450
Redondo Beach Learning Academy	1,540
Redondo Union High School	1,730
Jefferson Elementary School	2,100
Parras Middle School	2,160
Our Lady of Guadalupe School	2,500
Valor Christian Academy	2,525
West High School	2,620
Medical Facilities	
Outpatient Medical Offices (located on the BCHD campus)	0

As shown in Table 3.2-4, the nearest sensitive receptors to the Project site are the Beach Cities Child Development Center, Silverado Beach Cities Memory Care Community, and outpatient medical offices located on the BCHD campus, as well as the single-family residences located as close as 80 feet to the Project site. See Table 3.11-5 and Figure 3.11-1 in Section 3.11, *Noise*, for additional descriptions and depictions of these sensitive receptors.

3.2.2 Regulatory Setting

Air quality within the Basin is addressed through the efforts of Federal, State, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies responsible for improving the air quality within the air basins are discussed below.

Federal Regulations

Clean Air Act

The Federal CAA was passed in 1963 and amended in 1990 and was the first comprehensive Federal law to regulate air emissions from stationary and mobile sources. Among other things, the CAA authorizes the USEPA to establish and enforce NAAQS for pollutants considered harmful to public health and the environment, including the six criteria air pollutants: CO, Pb, NO_2, O_3, $PM_{2.5}$ and PM_{10}, and SO_2. The NAAQS help to ensure basic health and environmental protection from air pollution. The CAA also gives USEPA the authority to limit emissions of air pollutants coming from sources like chemical plants, utilities, and steel mills.

U.S. Environmental Protection Agency

Pursuant to the CAA, the USEPA must designate areas as meeting (i.e., in attainment) or not meeting (i.e., in nonattainment) the Federal standards for the six criteria air pollutants. As part of its enforcement responsibilities, the USEPA requires each State with Federal nonattainment area to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain the Federal standards. The SIP must integrate Federal, State, and local plan components and regulations to identify specific measures to reduce pollution, using a combination of performance standards and market-based programs within the timeframe identified in the SIP. These plans are developed by State and local air quality management agencies and submitted to the USEPA for approval.

The USEPA has adopted multiple tiers of emission standards to reduce emissions from non-road diesel engines by integrating engine and fuel controls as a system to gain the greatest emission reductions. The first Federal standards (Tier 1) for new non-road (or off-road) diesel engines were adopted in 1994 for engines over 50 horsepower, to be phased-in from 1996 to 2000. On August 27, 1998, the USEPA introduced Tier 1 standards for equipment under 37 kilowatts (50 horsepower) and increasingly more stringent Tier 2 and Tier 3 standards for all equipment with phase-in schedules from 2000 to 2008. Tier 1 through 3 standards were met through advanced engine design, with no or only limited use of exhaust gas after-treatment (oxidation catalysts).

Tier 3 standards for nitrogen oxides and hydrocarbons are similar in stringency to the 2004 standards for highway engines; however, Tier 3 standards for particulate matter were never adopted. On May 11, 2004, the USEPA signed the final rule introducing Tier 4 emission standards, which were phased-in between 2008 and 2015. Tier 4 standards require that emissions of particulate matter and NO_x be further reduced by about 90 percent. Such emission reductions are achieved using control technologies, including advanced exhaust gas after-treatment, similar to those required by the 2007 to 2010 standards for highway engines.

State Regulations

California Clean Air Act

The CCAA requires all areas of the State to achieve and maintain the CAAQS by the earliest practicable date. The CAAQS includes more stringent standards than the NAAQS.

California Air Resources Board

CARB, which is a part of the California Environmental Protection Agency (CalEPA), is responsible for the coordination and administration of both Federal and State air pollution control programs within California. In this capacity, CARB conducts research, sets the CAAQS, compiles emission inventories, develops suggested control measures, provides oversight of local programs, and prepares the SIP for submission to the USEPA.

In April 2005, CARB published the Air Quality and Land Use Handbook: A Community Health Perspective, which serves as a general guide for considering impacts to sensitive receptors from facilities that emit TAC emissions. The recommendations provided in the handbook are voluntary and do not constitute a requirement or mandate for either land use agencies or local air districts. The goal of the guidance document is to protect sensitive receptors, such as children, the elderly, acutely ill, and chronically ill persons, from exposure to TAC emissions.

CARB has also established California Idling Regulations that restrict the idling of heavy-duty vehicles. In particular, the Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling requires, among other things, that drivers of diesel-fueled commercial motor vehicles with gross vehicle weight ratings greater than 10,000 pounds, including buses and sleeper berth equipped trucks, not idle the vehicle's primary diesel engine longer than 5 minutes at any location.

California Air Toxics "Hot Spots" Information and Assessment Act

The Air Toxic "Hot Spots" Information and Assessment Act (Air Toxic Hot Spots Act) identifies toxic air contaminant hot spots where emissions from specific stationary source facilities may expose individuals to an elevated risk of adverse health effects. It requires that a business or other establishment identified as a significant source of toxic emissions provide the affected population with information about health risks posed by the emissions. Health Risk Assessments (HRAs) identify the hazard or hazardous material, assess the amount, duration, and pattern of exposure to the hazard or hazardous material, assess the amount it would take to cause negative health effects, and characterize the risk to the general population and sensitive receptors from the hazard or hazardous material. The CalEPA's Office of Environmental Health Hazard Assessment (OEHHA) has published A Guide to Health Risk Assessment and The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments to aid California projects' compliance with the Air Toxic Hot Spots Act.

CARB Off-Road Mobile Sources Emission Reduction Programs

The CCAA mandates CARB to achieve the maximum degree of emission reductions from all off-road mobile sources in order to attain the State ambient air quality standards. Off-road mobile sources include heavy construction equipment. Tier 1, Tier 2, and Tier 3 standards for large compression-ignition engines used in off-road mobile sources went into effect in California for most engine classes in 1996, 2001, and 2006, respectively. Tier 4 or Tier 4 Interim (4i) standards apply to all off-road diesel engines model years 2012 or newer. In addition, equipment can be retrofitted to achieve lower emissions using the CARB-verified retrofit technologies. The engine standards and ongoing rulemaking jointly address the products of diesel combustion, including emissions and toxic diesel particulate matter. The California Emission Standards for Off-Road Compression-Ignition Engines are as specified in California Code of Regulations (CCR) Title 13, Division 3, Chapter 9, Article 4, Section 2423.

Regional Regulations

South Coast Air Quality Management District

The SCAQMD is the regional agency principally responsible for comprehensive air pollution control in the Basin. To that end, the SCAQMD works directly with the Southern California Association of Governments (SCAG), county transportation commissions, local governments, and cooperates actively with all Federal and State government agencies. Under Federal and State law, the SCAQMD is under a legal obligation to enforce air pollution regulations. These regulations

are primarily meant to ensure that the ambient air meets Federal and State air quality standards. In addition to developing rules and regulations, SCAQMD establishes permitting requirements, inspects emissions sources, and effectuates ongoing regional air quality improvements through a combination educational and penalty programs, including fines or sanctions when necessary. SCAQMD is directly responsible for reducing emissions from stationary (area and point), mobile, and natural sources.

Air Quality Management Plan

The SCAQMD maintains and periodically updates an Air Quality Management Plan (AQMP) for the Basin. The most recent of these is the 2016 AQMP, which was adopted by the Governing Board of SCAQMD on March 3, 2017. The 2016 AQMP was prepared to comply with the Federal and State Clean Air Acts and amendments, to accommodate growth, to reduce the high pollutant levels in the Basin, to meet Federal and State ambient air quality standards, and to minimize the fiscal impact that pollution control measures have on the local economy.

The 2016 AQMP identifies the control measures that will be implemented over a 20-year horizon to reduce major sources of pollutants. The 2016 AQMP includes data to demonstrate attainment for the 2008 8-hour O_3 standard, the 2012 annual $PM_{2.5}$ standard, the 2006 24-hour $PM_{2.5}$ standard, the 1997 8-hour O_3 standard and the 1979 1-hour O_3 standard within the planning horizon (SCAQMD 2017).

The future air quality levels projected in the 2016 AQMP are based on several assumptions. For example, the SCAQMD assumes that general new development within the Basin will occur in accordance with population growth and transportation projections identified by SCAG in the 2016 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), which was adopted on April 7, 2016. The 2016 AQMP also assumes that general development projects will include strategies in the form of project design features and practices and other mitigation measures to reduce emissions generated during construction and operation in accordance with SCAQMD and local jurisdiction regulations which are designed to address air quality impacts and pollution control measures. This 2016 AQMP identifies the control measures that would be implemented to reduce major sources of pollutants. These planning efforts have substantially decreased the population's exposure to unhealthful levels of pollutants, even while substantial population growth has occurred within the Basin.

SCAQMD is currently developing the 2022 AQMP to address the 2015 updated NAAQS for ground-level O_3, for which the Basin is designated extreme nonattainment.

SCAQMD Rule Book

The SCAQMD has adopted the SCAQMD Rule Book, which establishes a set of rules and regulations that address air pollution sources. Some SCAQMD rules are administrative in nature, but many relate to a specific type of operation or source of pollution. Each regulation is broken down into rules, each of which governs a specific topic within that regulation. SCAQMD rules that may apply to the proposed Project include:

- **Rule 402 Nuisance** – This rule prohibits discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.
- **Rule 403 Fugitive Dust** – The purpose of this rule is to reduce the amount of particulate matter (e.g., PM_{10}) entrained in the ambient air as a result of anthropogenic (i.e., man-made) fugitive dust sources, such as grading and excavation, by requiring actions to prevent, reduce or mitigate fugitive dust emissions.
- **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. For example, exterior paints and finishes are limited to a VOC emissions rate of 50 grams per liter (g/L).
- **Rule 1138 Control of Emissions from Restaurant Operations** – This rule specifies emissions and odor control requirements for commercial cooking operations that use chain-driven charbroilers to cook meat (e.g., for the kitchen facilities in the proposed RCFE Building and the Blue Zones café).
- **Rule 1146.2 Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters** – This rule requires manufacturers, distributors, retailers, refurbishers, installers, and operators of new and existing units to reduce NO_x emissions from natural gas-fired water heaters, boilers, and process heaters as defined in this rule.
- **Rule 1186 PM_{10} Emissions from Paved and Unpaved Roads** – This rule applies to owners and owners of paved and unpaved roads. The rule is intended to reduce PM_{10} emissions by requiring the cleanup of material deposited onto paved roads, use of certified street sweeping equipment, and treatment of high-use unpaved roads.

In addition to developing air pollution regulations, the SCAQMD is under a legal obligation to enforce these regulations. The SCAQMD also has broad authority to regulate toxic and hazardous

air emissions, and these regulations are enforced in the same manner as those which pertain to the ambient air quality standards. The SCAQMD has devised a broad compliance program to provide for enforcement activities.

SCAQMD CEQA Air Quality Handbook

In 1993, the SCAQMD prepared the SCAQMD CEQA Air Quality Handbook to assist local government agencies and consultants in preparing environmental documents for projects subject to CEQA. The CEQA Air Quality Handbook describes the criteria that SCAQMD uses when reviewing and commenting on the adequacy of environmental documents. Other important subjects covered in the CEQA Air Quality Handbook include methodologies for estimating project emissions and mitigation measures that can be implemented to avoid or reduce air quality impacts. Although the Governing Board of the SCAQMD has adopted the CEQA Air Quality Handbook, the SCAQMD does not supersede a local jurisdiction's CEQA procedures.

The SCAQMD is in the process of developing the Air Quality Analysis Guidance Handbook (Guidance Handbook) to replace the 1993 CEQA Air Quality Handbook. While the Guidance Handbook is still being developed, the SCAQMD has adopted supplemental guidance for conducting an air quality analysis. This guidance includes revisions to the air quality significance thresholds and a procedure referred to as *"localized significance thresholds,"* which has been added as a significance threshold under the Final Localized Significance Threshold (LST) Methodology. LSTs are developed based on the ambient concentrations of that pollutant for each SRA. The LST methodology provides thresholds of significance for NO_x, CO, PM_{10}, and $PM_{2.5}$ to evaluate localized air quality impacts at sensitive receptors in the vicinity of a project, in lieu of conducting dispersion modeling. The LST methodology and associated mass rates are not designed to evaluate localized impacts from mobile sources traveling over the roadways.

Southern California Association of Governments

SCAG is the Metropolitan Planning Organization for Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura Counties. Although SCAG is not an air quality management agency, it addresses regional issues relating to transportation, the economy, community development, and the environment resources and constraints. As part of regional planning, SCAG is responsible for developing transportation, land use, and energy conservation measures that affect air quality.

SCAG has adopted strategies and plans to implement California's Sustainable Communities and Climate Protection Act (Senate Bill [SB] 375). On September 3, 2020, SCAG's Regional Council adopted the 2020-2045 RTP/SCS (Connect SoCal). Connect SoCal is supported by a combination

of transportation and land use strategies that help the region achieve State GHG emission reduction goals and Federal CAA requirements, preserve open space areas, improve public health and roadway safety, support the vital goods movement industry, and utilize resources more efficiently. See Section 3.7, *Greenhouse Gas Emissions and Climate Change,* for a discussion of the RTP/SCS and GHG emissions.

City of Redondo Beach Local Regulations

As a local jurisdiction, the City of Redondo Beach has the authority and responsibility to reduce air pollution through its police power and decision-making authority. Specifically, the City of Redondo Beach is responsible for the assessment and mitigation of air emissions resulting from its land use decisions. Redondo Beach is also responsible for the implementation of transportation control measures as outlined in the AQMP. Examples of such measures include development of bus turnouts to reduce traffic congestion, energy-efficient streetlights, and synchronized traffic signals. Redondo Beach assesses the air quality impacts of new development projects, requires mitigation of potentially significant air quality impacts by conditioning discretionary permits, and monitors and enforces implementation of such mitigation.

Redondo Beach General Plan Land Use Element

The Redondo Beach General Plan Land Use Element includes the following policies that directly relate to reducing air quality impacts:

Policy 1.9.1 Control the development of industrial and other uses which use, store, produce, or transport toxics, generate unacceptable levels of noise, air emissions, or contribute other pollutants; requiring adequate mitigation measures confirmed by environmental review (I1.1, I1.8).

Policy 1.60.4 Establish local procedures, requirements, and programs as to maintain local and regional environmental quality and mitigate impacts; including, but not limited to, air quality management, traffic congestion management, jobs-housing balance, hazardous waste management, water and energy conservation, water quality control, noise abatement, and coastal protection (I1.1, I1.2, I1.3, I1.8).

Policy 1.57.3 Require that the elevation of all parking structures facing residential parcels be enclosed or controlled to prevent adverse

noise and air emission impacts on the residences and incorporate architectural design elements, such as surface treatments, off-set planes, and structural articulation and landscape, to provide visual interest and be compatible with the residences (I1.1, I1.7, I1.18).

Redondo Beach General Plan Transportation and Circulation Element

Goal 12: Encourage all employers to pursue successful TDM measures demonstrated in South California.

Goal 14: Increase the provision of bike lockers, bike racks, and lighting for bike facilities.

Many other goals and individual policies, as set forth in Section 3.14, *Transportation* and Section 3.7, *Greenhouse Gas Emissions and Climate Change*, also have the practical effect of reducing air pollution by reducing vehicle miles traveled (VMT), and fossil fuel, water, and energy consumption.

City of Torrance Local Policies and Regulations

The Torrance General Plan (2010) includes multiple chapters that identify goals and policies designed to help improve air quality in the City. Trip reduction strategies are addressed in the land use and circulation elements. The land use element also includes policies to encourage walkability through site design. The circulation element includes policies to encourage the use of alternative forms of transportation and implementation strategies for employers, developers, and merchants. Transportation Demand Management (TDM) 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 (City of Torrance 2010).

Torrance General Plan Community Resources Element

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 (See Section 3.7, *Greenhouse Gas Emissions and Climate Change* for a discussion of GHG emissions reduction policies).

Torrance Trip Reduction and Traffic Management Ordinance

In order to reduce mobile source emissions, the City has adopted a Trip Reduction and Traffic Management Ordinance (Municipal Code Division 9 Chapter 10) to incentivize walking, cycling, use of public transit, and carpooling to work.

3.2.3 Impact Assessment Methodology

3.2.3.1 Thresholds for Determining Significance

The following thresholds of significance are based on Appendix G of the 2020 CEQA Guidelines. For purposes of this EIR, implementation of the proposed Project may have a significant adverse impact on air quality if it would do any of the following:

a) Conflict with or obstruct implementation of the applicable air quality plan;

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard;

c) Expose sensitive receptors to substantial pollutant concentrations; and/or

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

In determining whether an effect is significant, CEQA Guidelines Section 15064.7 states that a Lead Agency may consider thresholds of significance previously adopted or recommended by other public agencies, provided that the decision to use such thresholds is supported by substantial evidence. Further, with regard to air quality, CEQA Guidelines Section 15064.7 reads:

> *"Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make ... determinations."*

In a February 2018 CEQA Guidance document released by SCAQMD (SCAQMD 2018), the SCAQMD states that:

> *"Air districts' thresholds provide a clear quantitative benchmark to determine the significance of project and project alternative air quality impacts. They also help identify the magnitude of the impacts, facilitate the identification of feasible mitigation measures, and evaluate the level of impacts before and after mitigation measures. Since one of the basic purposes of CEQA is to inform government decision makers and the public about the potential significant environmental effects of any proposed activities (CEQA Guidelines Section 15002[a][1]), use of air district thresholds is a best practice for CEQA impact determinations."*

The SCAQMD, the air pollution control agency in the Basin, has developed specific regional and local significance thresholds for air quality, and recommends that projects in the Basin be evaluated in terms of these thresholds. These SCAQMD thresholds do not supersede the significance thresholds established in Appendix G of the 2020 CEQA Guidelines described above; these SCAQMD thresholds are used to implement the CEQA thresholds with specific criteria to assess whether air pollution effects of proposed projects are significant. The impacts assessment of this EIR addresses the thresholds from Appendix G of the CEQA Guidelines through the application of SCAQMD thresholds which are specific to conditions in the Basin. The following thresholds are currently recommended by the SCAQMD and have been used to determine the significance of air quality impacts associated with the proposed Project.

Conflict with Air Quality Plan

The threshold used for determining whether the proposed Project would conflict with or obstruct an applicable air quality plan is qualitative and is based on whether the proposed Project is consistent with the assumed growth, applicable control measures and air emission reduction policies in the AQMP. Therefore, the proposed Project would have a significant impact if it would:

- Conflict with or obstruct implementation of the AQMP or any other adopted regional and local plans adopted for reducing air quality impacts.

Cumulatively Considerable Net Increase in Criteria Pollutants

Construction Emissions Thresholds

The SCAQMD recommends that projects with construction-related emissions that exceed any of the following regional (mass daily) emissions thresholds should be considered significant.

- 550 pounds per day of CO
- 100 pounds per day of NO_x
- 150 pounds per day of SO_x
- 75 pounds per day of VOC
- 150 pounds per day of PM_{10}
- 55 pounds per day of $PM_{2.5}$
- 3 pounds per day of Pb

Operational Emissions Thresholds

The SCAQMD's thresholds recommend that projects with operational emissions that exceed any of the following regional (mass daily) emissions should be considered potentially significant.

- 550 pounds per day of CO
- 55 pounds per day of NO_x
- 150 pounds per day of SO_x
- 55 pounds per day of VOC
- 150 pounds per day of PM_{10}
- 55 pounds per day of $PM_{2.5}$
- 3 pounds per day of Pb

Localized Significance Thresholds

As previously described, LSTs were developed for construction phases in response to the SCAQMD Governing Board's Environmental Justice Enhancement Initiative (I-4). The Final LST Methodology presents mass emission rates for each SRA, project sizes of 1, 2, and 5 acres, and nearest receptor distances of 25, 50, 100, 200, and 500 meters. For project sizes between the values given, or with receptors at distances between the given receptors, the methodology uses linear interpolation to determine the thresholds. If receptors are within 25 meters (82 feet) of the Project site (i.e., extent of construction activities), the methodology document says that the threshold for the 25-meter distance should be used.

The Project site is located in SRA 3. The nearest sensitive receptors are located on the BCHD campus and the nearest off-site sensitive receptors are located within 26 meters, including the residential uses located directly across Flagler Lane and Flagler Alley to the east of the Project site (refer to Table 3.2-4). The Project site is a 9.78-acres in size; however, this analysis uses LSTs for a 1-acre site to provide a conservative analysis (because a smaller site provides less buffering distance between construction activities and nearby sensitive receptors), given that construction activities would be distributed over a larger area, resulting in more disperse emissions. The LSTs for a 1-acre site within 25 meters of sensitive receptors in SRA 3 are:

- 664 pounds per day for CO
- 91 pounds per day for NO_2
- 5 pounds per day for PM_{10}
- 3 pounds per day for $PM_{2.5}$

CO and NO_2 LST thresholds apply to both residential and off-site worker receptors (i.e., people who work in businesses off-site). PM_{10} and $PM_{2.5}$ LST thresholds are relevant to sensitive receptors that are reasonably likely to be present for 24 hours or longer. Since off-site worker receptors are not expected to be present for this duration, PM_{10} and $PM_{2.5}$ LST thresholds do not apply to off-site worker receptors.

Impacts to Sensitive Receptors

Toxic Air Contaminants

CARB indicates that one of the highest public health priorities is the reduction of DPM generated by vehicles on California's freeways and highways, because it is one of the primary TACs. CARB's Air Quality and Land Use Handbook: A Community Health Perspective (2005) makes specific recommendations with respect to considering existing sensitive uses when siting new

TAC-emitting facilities or with respect to TAC-emitting sources when siting sensitive receptors. CARB recommends the following buffer distances be observed when locating these types of TAC emitters or sensitive land uses:

- Freeways or major roadways – 500 feet
- Dry cleaners – 500 feet
- Auto body repair services – 500 feet
- Gasoline dispensing stations with an annual throughput of less than 3.6 million gallons – 50 feet
- Gasoline dispensing stations with an annual throughput at or above 3.6 million gallons – 300 feet

The proposed Project does not place sensitive land uses within the above buffer zones. The nearest major arterial is the Pacific Coast Highway, located approximately 0.5 miles (2,640 feet) from the Project site. Other roadways in the immediate vicinity of the Project site (e.g., North Prospect Avenue and Beryl Street) do not carry sufficient volumes of traffic to be considered as potential TAC generators. Other potential TAC generators within the vicinity of the Project site are associated with specific types of facilities, such as gas stations, dry cleaners, and auto body repair shops, and are the focus of local control efforts. The existing Shell gas station at the southeast corner of North Prospect Avenue and Beryl Street is located approximately 330 feet from the Project site and approximately 485 feet from the proposed Residential Care for the Elderly (RCFE) Building, which would be constructed as a part of the Phase 1 preliminary site development plan.

The SCAQMD recommends that site-specific HRAs be performed to document potential cancer and non-cancer health risk, either when siting sensitive land uses within the above buffer zones or when a project could generate TACs that may impact surrounding sensitive receptors (e.g., residences). Based on the methodology established by the OEHHA, the SCAQMD established the following thresholds for maximum individual cancer risk (MICR)[2] and non-cancer acute and chronic hazard index (HI)[3] to assess a project's construction-related health impacts on sensitive receptors:

- MICR – cancer risk of less than 10 in one million ($<10x10^{-6}$)

[2] MICR is the maximum estimated risk of contracting cancer when continually exposed for a lifetime (70 years) to a given concentration of a substance. This does not necessarily mean anyone will contract cancer as a result of the project.
[3] The potential non-cancer health impacts resulting from a 1-hour exposure to toxic substances. An acute (i.e., generally developing suddenly and lasting a short time) hazard index is calculated by dividing the 1-hour concentration of a toxic pollutant by the acute reference exposure level for that pollutant. A chronic (i.e., conditions develop slowly and may worsen over an extended period of time) hazard index is calculated by dividing the annual average concentration of a toxic pollutant by the chronic reference exposure level for that pollutant.

- HI – highest chronic health index of less than 1

Construction emissions from diesel-fueled heavy construction equipment could cause TAC exposure for surrounding sensitive receptors, as further described below in Section 3.2.3.2, *Methodology*; therefore, a construction HRA has been prepared to assess health risks associated with the proposed Project, including both the Phase 1 preliminary site development plan and the more general Phase 2 development program.

CO Hotspots

With respect to the formation of CO hotspots, a project's localized air quality impact is considered significant if CO emissions create a hotspot where either the State 1-hour standard of 20 ppm or the Federal and State 8-hour standard of 9.0 ppm is exceeded. In general, this only occurs at severely congested intersections (i.e., LOS E or worse).

To reflect current conditions at the Project site and the stable trend in declining CO concentration levels in the Basin, SCAQMD's CO hotspot screening criteria have been used to describe potential CO hotspots within Redondo Beach and Torrance. A detailed CO analysis was conducted in the Federal Attainment Plan for Carbon Monoxide (CO Plan for the SCAQMD's 2003 Air Quality Management Plan). The locations selected for microscale modeling in this analysis were worst-case intersections in the Basin that would likely experience the highest CO concentrations. As such, SCAQMD modeled the four most congested intersections in the Basin: 1) Wilshire Boulevard & Veteran Avenue; 2) Sunset Boulevard & Highland Avenue; 3) La Cienega Boulevard & Century Boulevard; and 4) Long Beach Boulevard & Imperial Highway. In the 2003 AQMP, SCAQMD notes that the intersection of Wilshire Boulevard & Veteran Avenue is the most congested intersection in Los Angeles County, with an ADT of approximately 100,000 vehicles per day (SCAQMD 2003a). This intersection is located near the on- and off-ramps to I-405 in West Los Angeles. The evidence provided in Table 4-10 of Appendix V of the 2003 AQMP shows that the peak modeled CO concentration due to vehicle emissions at these four intersections was 4.6 ppm (maximum 1-hour concentration) and 3.2 (maximum 8-hour concentration) at Wilshire Boulevard & Veteran Avenue (exclusive of ambient background CO concentrations), which is well below the Federal and State CO standards. This indicates that intersections operating with less than 100,000 vehicles per day would not create a CO hot spot.

3.2.3.2 Methodology

Conflict with Applicable Air Quality Plan

Federal and State ambient air quality standards are designed to prevent the harmful effects of air pollutant emissions. These standards are continually updated based on evolving research, including research which relates air quality impacts with health effects. At the regional level, plans such as the SCAQMD's AQMP and SCAG's RTP/SCS work to ensure that the Basin reaches and maintains attainment with these Federal and State standards. Locally, EIRs evaluate a plan or project's consistency with applicable policies identified in the SCAQMD's AQMP and SCAG's RTP/SCS intended to protect human health.

SCAQMD is required, pursuant to the Federal CAA, to reduce emissions of criteria pollutants for which the Basin is in nonattainment of the NAAQS. The assessment of consistency with the AQMP focuses on the potential for construction and operation of the proposed Project to create or contribute to air quality violations and possibly delay air quality standards attainment. The SCAQMD's AQMP contains a comprehensive list of pollution control strategies directed at reducing emissions and achieving attainment with the NAAQS and CAAQS. The SCAQMD significance thresholds are health-protective and also serve to achieve attainment with the NAAQS and CAAQS within the Basin. Thus, projects, uses, and activities that generate emissions below SCAQMD's significance thresholds for criteria pollutants would thereby not conflict with or obstruct implementation of the AQMP.

Cumulatively Considerable Net Increase in Criteria Pollutants

CEQA Guidelines Section 15130 requires that an EIR discuss cumulative impacts of a project when the project's incremental effects are cumulatively considerable. A *"cumulative impact"* is an impact that is created as a result of the combination of the proposed project together with other projects causing related impacts. *"Cumulatively considerable"* means that the incremental effects of the individual project are significant when viewed in connection with the effects of past projects, current projects, and probable future projects.

The SCAQMD guidance on addressing cumulative impacts for air quality is as follows: *"As Lead Agency, the AQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR... Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds*

are generally not considered to be cumulatively significant" (SCAQMD 2003b). This policy is appropriate when addressing air quality impacts because project-specific criteria pollutant emissions are already evaluated in the SCAQMD's AQMP on a cumulative basis in the context of emissions occurring Basin-wide.

This analysis focuses on the air quality impacts that could occur from air pollutant emissions associated with the construction and operation of the proposed Project, including impacts from Project-related traffic volumes. Consistent with SCAQMD guidance, this analysis evaluates the contribution of the proposed Project to cumulative air quality impacts by comparing the estimated construction and operational emissions against the SCAQMD's thresholds of significance defined above, as described further below. Project-related construction and operational emissions were estimated using CalEEMod Version 2016.3.2 developed for SCAQMD. Calculation details are provided in the CalEEMod worksheet results in Appendix B.

Construction Emissions

Construction emissions were estimated using CalEEMod, which assesses emissions from each phase of construction, including demolition, excavation and site preparation, building construction, and architectural coating. CalEEMod was used to quantify emissions from construction equipment exhaust, construction vehicles, fugitive dust, and architectural coatings. Construction schedule, equipment utilization, the amount of demolition debris and excavated soil to be removed from the Project site, and the number of vehicle trips generated by construction workers and other construction vehicles (refer to Section 2.5.1.6, *Construction Activities* and Section 2.5.2.4, *Construction Activities*) were primarily developed by the construction management firm CBRE and manually included in the CalEEMod modeling. In cases where information was not provided by CBRE (e.g., trip length data for construction hauling), CalEEMod defaults were used.

Heavy construction equipment could include diesel-powered graders, excavators, dump trucks, cranes, and bulldozers. As a result, construction activities under the Phase 1 preliminary site development plan as well as the more general Phase 2 development program would temporarily increase diesel emissions from equipment and vehicle exhaust and would generate particulate matter in the form of fugitive dust. Compliance with SCAQMD rules and regulations that would be required during construction (e.g., SCAQMD Fugitive Dust Rule, etc.) were not included in CalEEMod to reflect a conservative analysis of the potential construction emissions. The precise construction timeline for the proposed Project depends on the timing of entitlements and permit

processing. The construction activities associated with the proposed Project and estimated durations are as follows (see Appendix B for the construction schedule used in the CalEEMod):

Phase 1 construction activity would begin in February 2022 and last for approximately 29 months with overlapping construction phases.

- Shoring, Excavation, and Utility Work – 2 months
- Construction of the RCFE Building – 24 months
- Demolition of the Beach Cities Health Center – 1 month

The development program under Phase 2 is expected to begin approximately 5 years after the completion of Phase 2 and would last for approximately 28 months. As with Phase 1, it is expected the duration of construction activities during Phase 2 would involve overlapping construction phases, including:

- Demolition of the Above Ground Parking Structure and Beach Cities Advanced Imaging Building – 3 months
- Excavation, Grading, and Utility Work – 1 month
- Construction of the New Medical Office Building – 6 months
- Construction of the Aquatics Center and Center for Health and Fitness (CHF) – 7 months
- Construction of the Wellness Pavilion – 6 months
- Construction of the Parking Garage – 12 months

CalEEMod calculates the peak day construction emissions by calculating emissions from overlapping construction activities. Peak daily construction emissions represent the potential worst-case maximum daily emissions of a construction day, and do not represent the emissions that would typically occur during every day of construction associated with the proposed Project. The estimated maximum daily construction emissions are then compared to the SCAQMD daily significance thresholds to identify any exceedances of thresholds, which could result in a significant impact.

Operational Emissions

Operational emissions associated with the proposed Project are estimated using CalEEMod for area, energy , and mobile source emissions. Operational air quality impacts are assessed by subtracting the baseline emissions from the total Project emissions and comparing the resulting increment (i.e., net increase or decrease in emissions) to the SCAQMD's numerical thresholds. Under CEQA, the baseline environmental setting for an EIR is established at or around the time that the Notice of Preparation (NOP) for the EIR is published. As discussed previously, the Project

site is currently occupied by the Beach Cities Health Center, outpatient medical office buildings, a maintenance building, and associated parking areas.

Area source emissions would be generated by consumer products, architectural coating, and landscape maintenance equipment. Energy source emissions are generated by emissions resulting from electricity and natural gas consumption for space and water heating. Mobile emissions that would result from vehicle trips to and from the BCHD campus were calculated based on the Intersection Operational Evaluation and other default traffic assumptions embedded in CalEEMod (see Appendix B). To determine if an air quality impact would occur, the incremental (i.e., net new) daily emissions from operation of the proposed BCHD Healthy Living Campus were compared with SCAQMD's regional (mass daily) thresholds.

Localized Significance Thresholds for Construction

The potential for construction emissions associated with the proposed Project to cause localized impacts for certain criteria pollutants was calculated using SCAQMD's LST Methodology (SCAQMD 2008). According to the SCAQMD LST Methodology, the assessment of localized impacts addresses only those emissions that are generated *"on-site,"* that is for the purposes of the proposed Project, emissions generated from within or along the boundaries of the Project site. Therefore, for this localized analysis, only the on-site emissions reported for each construction phase in the CalEEMod worksheets are examined.

Impacts to Sensitive Receptors

Health Effects from Criteria Air Pollutant Emissions

In December 2018, the California Supreme Court held that the EIR for the Friant Ranch Project – a 942-acre master-planned, mixed-use development with over 2,500 senior residential units, 250,000 square feet (sf) of commercial space, and extensive open space/recreational amenities on former agricultural land in north central Fresno County – was deficient in its informational discussion of air quality impacts as they relate to adverse human health effects.

As noted in the Brief of Amicus Curiae by the SCAQMD in the Friant Ranch case (April 6, 2015, Attachment A), SCAQMD concluded that currently available regional modeling tools are not well suited to analyze relatively small changes in criteria pollutant concentrations associated with individual projects. Regional modeling tools are generally designed to be used at the national, State, regional, and/or city levels and are not well equipped to analyze whether and to what extent the criteria pollutant emissions of an individual project directly impact human health in a particular area. Even where a HRA can be prepared, however, the resulting maximum health risk value is

only a calculation of risk – it does not necessarily mean anyone will contract cancer or non-cancer health risks as a result of the project.

For local plans or projects that exceed any identified SCAQMD air quality threshold, EIRs typically identify and disclose generalized health effects of certain air pollutants but are currently unable to establish a reliable connection between any local plan or an individual project and a particular health effect. In addition, no relevant agency has approved a quantitative method to reliably and meaningfully do so. A number of factors contribute to this uncertainty, including the regional scope of air quality monitoring and planning, technological limitations for modeling at a local plan- or project-level, and the intrinsically complex nature of the relationship between air pollutants and health effects in conjunction with local environmental variables. Therefore, at the time, it is infeasible for this EIR to directly link a plan's or project's significant air quality impacts with a specific health effect.

Toxic Air Contaminants

The greatest potential for TAC impacts during construction activities under the Phase 1 preliminary site development plan and the more general Phase 2 development program would be related to DPM emissions associated with heavy-duty construction equipment during demolition, excavation, and grading activities. Construction activities associated with the proposed Project would be sporadic, transitory, and short-term in nature. Nevertheless, while the proposed construction activities would be temporary, construction impacts associated with TACs have been addressed quantitatively in a construction HRA prepared by iLanco Environmental, LLC (iLanco) (see Appendix B).

The HRA prepared for the proposed Project quantifies the potential cancer risks and non-cancer chronic health impacts to sensitive receptors that may be affected by exposure to TACs from proposed construction activities. Operational sources of TACs associated with the proposed Project would be limited to vehicle trips to and from the Project site. Given that the proposed Project would result in a minor increase of 376 daily vehicle trips relative to existing conditions and a decrease in AM and PM peak hour trips (see Section 3.14, *Transportation*), health risk associated with operational emissions would also be similar to existing conditions. Since health risks from operations would remain similar to baseline existing conditions, operational impacts related to TACs were not quantified in the HRA.

Sensitive receptors include residences, schools, childcare, and convalescent facilities. The closest and most impacted sensitive receptors would be off-site residences surrounding the Project site (refer to Table 3.2-4). The on-site Beach Cities Child Care Development Center and on-site

residents at the existing Silverado Beach Cities Memory Care Community and the proposed RCFE Assisted Living and Memory Care facilities were also evaluated. Students at the Towers and Beryl Elementary schools were considered, but since these receptors are located much further away from the Project site, they would experience impacts much lower than nearby residential and on-site receptors. Consequently, while air dispersion modeling was conducted for these receptors, health impacts at these receptors were inferred to be lower than the PMI, MEIR, and on-site receptors and therefore, were not quantified.

The construction HRA was conducted by: 1) calculating TAC emissions; 2) determining maximum TAC concentrations at sensitive receptors via air dispersion modeling; 3) quantifying health risks associated with those maximum concentrations; and 4) comparing those health risks to SCAQMD's thresholds of significance. The HRA was conducted in accordance with the SCAQMD dispersion modeling guidance (SCAQMD 2020) and the OEHHA Guidance (OEHHA 2015). CalEEMod was used to quantify emissions from anticipated construction activities. The USEPA's AERMOD dispersion model was used for dispersion modeling (USEPA 2019b). CARB's Hotspots Analysis Reporting Program (HARP) Risk Assessment Standalone Tool was used to calculate cancer risk and non-cancer health impacts.

The USEPA's AERMOD dispersion model is the accepted method to address the movement of air pollutants and considers various parameters, including configuration of the construction equipment, terrain elevation, meteorological conditions (i.e., localized wind patterns), and the location of sensitive receptors in relation to the site.

HARP is the accepted model used to calculate cancer risk and non-cancerous chronic health impacts. HARP's Risk Assessment Standalone Tool module was used in this analysis to evaluate cancer risk and non-cancer chronic effects associated with the receptors noted above. HARP's default residential exposure duration for cancer risk assumes that residents live in their homes and are exposed to pollutant emissions for 30 years. However, because the proposed Project would be constructed over a 6-year period (i.e., 2022, 2023, 2024, 2029, 2030, and 2031), the exposure duration for this assessment was 6 years (i.e., 3 years for Phase 1 and 3 years for Phase 2). Additionally, since emissions would vary in magnitude and location for each phase of construction, risk estimates were calculated individually for the Phase 1 preliminary site development plan and the Phase 2 development program. The total cancer risk at each receptor was then determined by adding Phase 1 and Phase 2 cancer risks. Non-cancer chronic impacts reflect the maximum calculated value among the 6 construction years.

For the purposes of assessing TACs during construction, the construction HRA quantifies cancer risk and non-cancer chronic health effects at the point of maximum impact (PMI) and for the

maximum exposed individual resident (MEIR). The PMI is the location where the cancer risk or non-cancer chronic health effect is maximum, regardless of the presence of a human receptor at that location. No concentration higher than the PMI would occur from the proposed construction activities. The MEIR is the location with the highest cancer risk or non-cancer chronic health effect where a person can be reasonably present. The dispersion modeling was conducted to estimate ground-level DPM concentrations for the PMI, MEIR, Towers Elementary School, Beryl Heights Elementary School, and residents living at the Silverado Beach Cities Memory Care Community and at the proposed RCFE Building that would be constructed during Phase 1 of the proposed Project (see Appendix B).

Health risk calculations were performed using the OEHHA methodologies and exposure parameters, and the corresponding SCAQMD guidance documents. In March 2015, OEHHA updated the methods for estimating cancer risks to use higher estimates of cancer potency during early life exposures and to use different assumptions for breathing rates and length of residential exposures. The Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments, incorporates advances in risk assessment with consideration of infants and children using Age Sensitivity Factors (OEHHA 2015). These updated exposure factors can result in numeric life-time health risk values to be approximately two to three times higher than those calculated under the previous OEHHA guidelines.

Project construction activities would require the use of off-road construction equipment and on-road vehicles. These equipment and vehicles would primarily burn diesel fuel, resulting in combustion exhaust emissions. The primary TAC of concern associated with combustion of diesel fuel is DPM. OEHHA guidance indicates that particulate matter of 10 microns in diameter or smaller (PM_{10}) be used as a surrogate for the TAC DPM when evaluating health risks associated with DPM (OEHHA 2015).

Diesel exhaust is the dominant type of TAC emission associated with construction of the proposed Project and diesel emissions would be emitted in closest proximity to receptors.

Detailed methodologies and assumptions utilized in the HRA are described further in Appendix B.

CO Hotspots

Localized air quality impacts and respiratory health risks could occur as a result of CO hotspots. Areas with high vehicle volumes, such as congested intersections (i.e., LOS E or worse), have the potential to create high concentrations of CO, known as CO hot spots. This analysis considers the potential generation of 376 net new vehicle trips per day following buildout under the Phase 2

development program (see Section 3.14, *Transportation*) and its contribution to the most congested intersections affected by the proposed Project.

3.2.4 Project Impacts and Mitigation Measures

Impact Description (AQ-1)

a) Conflict with or obstruct implementation of the applicable air quality plan.

AQ-1 **Construction and operation of the proposed Beach Cities Health District (BCHD) Healthy Living Campus – including the Phase 1 preliminary site development plan and the Phase 2 development program – would generate emissions that would contribute to Basin-wide air pollutant emissions. Because the proposed Project would not cause or increase the severity of air quality violations and mitigated emissions would not exceed the South Coast Air Quality Management District's (SCAQMD's) significance thresholds, the proposed Project would not conflict with the Air Quality Management Plan (AQMP). Impacts would be *less than significant with mitigation.***

Generally, a project would conflict with or potentially obstruct implementation of an air quality plan if the project would create or contribute to air quality violations within the Basin. Air quality violations occur when facilities are out of compliance with applicable SCAQMD rule requirements, permit conditions or legal requirements, or with applicable Federal or State air pollution regulations. The regional and localized air quality significance thresholds were designed as a screening tool to avoid the potential occurrence and exacerbation of air quality violations resulting from construction and operation of individual projects based on the designation of emissions sources warranting advanced permitting and regulation.

As described in Impact AQ-2 below, peak daily criteria pollutant emissions from construction of the proposed Project would not exceed the SCAQMD's mass daily significance thresholds for construction. Unmitigated localized construction emissions from the proposed Project would exceed SCAQMD's LSTs for PM_{10} and $PM_{2.5}$ (fugitive dust). However, implementation of MM AQ-1 includes watering of exposed soil surfaces three times daily, which would achieve a fugitive dust reduction of 74 percent, and prohibiting demolition when wind speed is greater than 25 mph, which would achieve a fugitive dust reduction of 98 percent. Implementation of MM AQ-1 would reduce on-site construction emissions for PM_{10} and $PM_{2.5}$ below the SCAQMD's LSTs.

As described in Impact AQ-3 below, peak daily criteria pollutant emissions from operation of the proposed Project would not exceed the SCAQMD's mass daily significance thresholds for

operation. Further, localized operational emissions from operation of the proposed Project, including the Phase 1 preliminary site development plan and the Phase 2 development program, would not exceed the SCAQMD's LSTs.

The proposed Project would not result in, cause, or contribute to air quality violations within the Basin. With implementation of MM AQ-1, localized construction emissions from the proposed Project would not exceed SCAQMD's LSTs. Therefore, the proposed Project would not conflict with the SCAQMD's 2016 AQMP, and impacts would be *less than significant with mitigation* for the Phase 1 preliminary site development plan and the Phase 2 development program.

Impact Description (AQ-2)

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard.

AQ-2 Construction activities associated with the proposed Project – including the Phase 1 preliminary site development plan and the Phase 2 development program – would generate air pollutant emissions; however, emissions of CO, NO_x, SO_x, PM_{10}, $PM_{2.5}$, and VOC, would not exceed South Coast Air Quality Management District's (SCAQMD's) regional significance thresholds for construction. On-site construction-related emissions would exceed the Localized Significant Thresholds (LSTs) for PM_{10} and $PM_{2.5}$. Therefore, the Project could expose sensitive receptors to substantial pollutant concentrations. However, this impact would be *less than significant with mitigation.*

As described in Section 3.2.3.2, *Methodology*, projects with impacts below the SCAQMD thresholds are not considered to contribute considerably to cumulative impacts. The following impact analysis considers peak daily and localized construction emissions generated from construction of the proposed Project, including the Phase 1 preliminary site development plan and the Phase 2 development program. These peak daily and localized construction emissions are evaluated against the SCAQMD's mass daily significance thresholds and LSTs, respectively, to determine whether construction of the proposed Project would contribute to a cumulatively considerable net increase of criteria pollutants.

Peak Daily Construction Emissions

During construction of Phase 1 and Phase 2, construction-related pollutant emissions such as PM_{10}, $PM_{2.5}$, NO_x, SOx, CO, and VOC would be generated by exhaust from heavy-duty on-site construction equipment, haul trucks, and construction worker vehicles. The majority of fugitive dust emissions (i.e., PM_{10} and $PM_{2.5}$) would result during demolition and excavation activities. During the architectural finishing phase, the application of architectural coatings (i.e., paints) and other building materials would also release VOC emissions. The assessment of construction air quality impacts provided in detail below quantifies each of these potential sources.

Haul truck trips, concrete truck trips, and materials delivery truck trips are described in detail in Section 2.5.1.6, *Construction Activities* and Section 2.5.2.4, *Construction Activities*. These truck trips in and out of the Project site would exit the Interstate (I-) 405 freeway on 190th Street or Hawthorne Avenue to 190th Street and reach the site using Del Amo Street to North Prospect Avenue (refer to Figure 2-13). Haul trucks would idle on-site while waiting to export excavation and debris from demolition. However, these trucks would be prohibited from idling for longer than 5 minutes pursuant to California Idling Regulations as defined by CARB, which prohibits heavy-duty diesel vehicles with a Gross Vehicle Weight Rating of 10,000 pounds or more from idling for longer than 5 minutes. Compliance with this regulation would result in minor, intermittent sources of air emissions. Additionally, roadways along the inbound and outbound haul routes carry substantial volumes of traffic, which currently generates mobile source emissions. As such, the haul truck trips associated with the Phase 1 preliminary site development plan and Phase 2 development program would not substantially increase mobile source emissions above existing conditions along these routes.

SCAQMD Rule 403 requires management of all fugitive dust (PM_{10}) generated during construction activities. All haul trucks would be required to be covered to contain dirt, sand, soil, or other loose materials during transport. Wheel washers would be installed where vehicles enter and exit the Project site onto paved roads, and/or wash-off trucks would be required for any equipment leaving the site before each trip to prevent tracking of construction dust/dirt off-site. All construction activities associated with the proposed Project would be required to control dust, including application of water at least two times daily, or by application of non-toxic soil stabilizers to all unpaved parking or staging areas or unpaved road surfaces, as well as application of non-toxic soil stabilizers to all inactive construction areas. The proposed Project would also be required to comply with SCAQMD Rule 1186, which requires the use of certified street sweepers or roadway washing trucks if visible soil materials are carried onto adjacent streets. Compliance with these SCAQMD requirements would ensure that fugitive dust emissions would be reduced during

the demolition, excavation, and building construction phases of the Project. Although these fugitive dust measures would be required by SCAQMD to reduce fugitive dust emissions, these were conservatively excluded from the CalEEMod for the proposed Project, and are not reflected in Table 3.2-5.

Table 3.2-5. Unmitigated Maximum Estimated Construction Emissions Compared to SCAQMD Thresholds (lbs/day)

Emission Source	CO	VOC	NO_x	SO_x	PM_{10}	$PM_{2.5}$
Phase 1						
Construction (2022)	30	4	**61**	0	16	**4**
Construction (2023)	38	12	26	0	4	2
Construction (2024)	25	9	41	0	**17**	**4**
Phase 2						
Construction (2029)	34	4	34	0	6	2
Construction (2030)	54	20	34	0	11	3
Construction (2031)	**55**	**27**	34	0	11	3
Peak Daily Total	**55**	**27**	**61**	**0**	**17**	**4**
SCAQMD Thresholds of Significance	*550*	*75*	*100*	*150*	*150*	*55*
Above Thresholds?	**No**	**No**	**No**	**No**	**No**	**No**

Notes: Refer to Appendix B for CalEEMod output sheets. **Bold** text indicates the highest potential daily emission level over the two construction phases.
Source: SCAQMD 2019b.

A portion of the VOC emissions associated with the Phase 1 and the Phase 2 would be generated from the application of architectural coatings, including paints, stains, and other finishes that off-gas VOCs during the drying/curing process. However, in compliance with the SCAQMD Rule 1113, the proposed Project would use No VOC or Low VOC finishes (i.e., VOC emission ratings <50 g/L). Use of No VOC or Low VOC finishes would ensure that VOC emissions during the architectural coating phase of construction would be minimized. Although the use of No VOC or Low VOC finishes would be required by SCAQMD Rule 1113, this measure was conservatively excluded from the CalEEMod, and is not reflected in the VOC emissions presented in Table 3.2-5 above.

Maximum daily criteria pollutant emissions for individual and overlapping construction activities were estimated using CalEEMod for each stage of construction, including demolition, grading/excavation, building construction, and architectural coating for both the Phase 1 preliminary site development plan and the Phase 2 development program. As shown in Table 3.2-5, maximum daily construction emissions would not exceed SCAQMD thresholds for CO, VOC, NO_x, SO_x, PM_{10}, or $PM_{2.5}$ for the proposed Project. Therefore, impacts relating to temporary, short-

term emissions of construction-related air pollutants would be *less than significant* for the Phase 1 preliminary site development plan and the Phase 2 development program .

Localized Construction Emissions

Sensitive receptors, including the Silverado Beach Cities Memory Care Community, Beach Cities Child Development Center, and outpatient medical offices (refer to Table 3.2-4), are currently located on the BCHD campus and would remain on-site during the construction activities associated with Phase 1. Additional off-site sensitive receptors include the single-family residences located approximately 80 (26 meters) feet to the east in West Torrance, multi-family residences located approximately 80 feet (26 meters) to the north along Beryl Street, and Dominguez Park located approximately 110 feet (34 meters) to the northeast of the Project site. Nearby residents as well as those using the recreational facilities located near the Project site, particularly the elderly and children, could experience adverse health effects from CO, NO_x, PM_{10}, or $PM_{2.5}$, if concentrations of these criteria pollutants exceed the applicable LSTs. For example, fugitive dust would be generated during construction activities due to grading and excavation activities. Additionally, NO_x, CO, PM_{10}, and $PM_{2.5}$ emissions from engine exhaust would be generated by diesel trucks and construction equipment. Although these construction-related emissions would be temporary, they could expose sensitive receptors to substantial pollutant concentrations during the estimated 29-month Phase 1 construction period and 28-month Phase 2 construction period.

The LSTs listed in Table 3.2-6 below, per SCAQMD guidance, only apply to those emissions generated by on-site construction activities and do not apply to off-site mobile emissions (e.g., haul truck trips). The closest sensitive receptors include the single-family residences to the east and multi-family residences to the north located within 26 meters from the Project site boundary. Off-site worker receptors include employees within the Redondo Village Shopping Center to the north of the Project site. Therefore, LSTs for receptors located within 25 meters from the Project site in SRA 3 were used to determine if the construction emissions associated with Phase 1 and Phase 2 of the proposed Project would result in exceedance of the LSTs (see Table 3.2-6).

Table 3.2-6. Unmitigated On-site Construction Emissions (lbs/day) Compared to Localized Significance Thresholds for 25 Meter Receptors

Emission Source	Sensitive Receptors				Off-site Worker Receptors	
	CO	**NO_2**	**PM_{10}**	**PM2.5**	**CO**	**NO_2**
Phase 1						
2022 On-site Emissions	21.3	**26.8**	13.5	**3.0**	21.3	**26.8**
2023 On-site Emissions	30.3	23.1	1.2	1.1	30.3	23.1
2024 On-site Emissions	17.0	17.4	**13.9**	2.7	17.0	17.4
Phase 2						
2029 On-site Emissions	27.5	22.6	4.1	1.3	27.5	22.6
2030 On-site Emissions	**34.6**	14.2	0.3	0.3	**34.6**	14.2
2031 On-site Emissions	31.6	14.0	0.4	0.4	31.6	14.0
Localized Significance Threshold	*664*	*91*	*5*	*3*	*664*	*91*
Above Thresholds?	**No**	**No**	**Yes**	**Yes**	**No**	**No**

Notes: See Appendix B for CalEEMod output sheets. **Bold** text indicates the highest potential daily emission level over the construction phases. Emissions might not add precisely due to rounding.
SCAQMD LST thresholds are based on:
1 acre of daily disturbed area. This is a very conservative estimate; the construction site is larger than 1 acre and construction activities would be distributed over a larger area, resulting in more disperse emissions. 25-meter separation distance to the closest residential/sensitive receptor. 25-meter separation distance to the closest worker receptor. SRA: 3.
PM_{10} and $PM_{2.5}$ LST thresholds are relevant to sensitive receptors that are reasonably likely to be present for $\geq$ 24 hours. Since off-site worker receptors are not expected to be present for this duration, significance for particulates does not apply to off-site worker receptors.
Source: SCAQMD 2009.

The greatest levels of daily CO construction emissions are projected to occur during Phase 2 construction (2030). The greatest levels of NO_x and $PM_{2.5}$ construction emissions are projected to occur during Phase 1 construction (2022). The greatest levels of PM_{10} are projected to occur, as fugitive dust emissions, at the end of Phase 1 during demolition of the Beach Cities Health Center (2024). As shown in Table 3.2-6, the Phase 1 construction emissions would exceed LSTs for PM_{10} and $PM_{2.5}$; therefore, air quality impacts to sensitive receptors related to localized temporary construction-related emissions would be *potentially significant* for the Phase 1 preliminary site development plan and *less than significant* for the Phase 2 development program. However, implementation of MM AQ-1, which would require watering exposed soils three times daily and prohibiting demolition when wind speeds are greater than 25 mph, would reduce localized PM_{10} and $PM_{2.5}$ emissions to below SCAQMD's LSTs and mitigated on-site construction emissions would be *less than significant with mitigation*.

Mitigation Measure (MM)

MM AQ-1 ***Air Quality Management Plan.*** *Beach Cities Health District (BCHD) shall prepare an Air Quality Management Plan for project construction, which shall be approved by the City of Redondo Beach and the City of Torrance prior to issuance of demolition, grading, or building permits for the Phase 1 preliminary site development plan or the Phase 2 development program. The plan shall include the following conditions for construction:*

- *Construction equipment engines shall be maintained in good condition and in proper tune per manufacturer's specification for the duration of construction.*
- *All construction activities that are capable of generating fugitive dust are required to implement dust control measures during each phase of construction to reduce the amount of particulate matter entrained in the ambient air. These measures include the following:*
    - *Quick replacement of ground cover in disturbed areas.*
    - *Watering of exposed surfaces three times daily.*
    - *Watering of all unpaved haul roads three times daily.*
    - *Covering all stock piles with tarp.*
    - *Post signs on-site limiting traffic to 15 miles per hour (mph) or less on unpaved roads.*
    - *Prohibit demolition when wind speed is greater than 25 mph.*
    - *Sweep streets adjacent to the project site at the end of the day if visible soil material is carried over to adjacent roads.*
    - *Cover or have water applied to the exposed surface of all trucks hauling dirt, sand, soil, or other loose materials prior to leaving the site to prevent dust from impacting the surrounding areas.*
    - *Install wheel washers where vehicles enter and exit unpaved roads onto paved roads to wash off trucks and any equipment leaving the site each trip.*
- *Construction activities associated with the proposed Project shall use USEPA Tier 4 engines on all construction equipment, except crushing equipment, which would reduce DPM emissions from combustion by 94 percent for Phase 1 and 79 percent for Phase 2 construction.*
- *Construction-related equipment, including heavy-duty equipment, motor vehicles, and portable equipment, shall be turned off when not in use for more than 5 minutes.*

Residual Impact

Localized Construction Emissions

Impacts related to localized construction emissions would be mitigated with implementation of specific components of MM AQ-1. In addition to SCAQMD Rule 403 for required fugitive dust control, MM AQ-1 includes watering of exposed soil surfaces three times daily, which would achieve a fugitive dust reduction of 74 percent, and prohibiting demolition when wind speed is greater than 25 mph, which would achieve a fugitive dust reduction of 98 percent. The associated reductions in PM_{10} and $PM_{2.5}$ are reflected in the maximum daily on-site construction emissions shown in Table 3.2-7.

Table 3.2-7. Mitigated On-site Construction Emissions (lbs/day) Compared to Localized Significance Thresholds for 25 Meter Receptors

Emission Source	Sensitive Receptors				Off-site Worker Receptors	
	CO	NO_2	PM_{10}	PM2.5	CO	NO_2
Phase 1						
2022 On-site Emissions	21.3	**26.8**	**4.4**	**1.6**	21.3	**26.8**
2023 On-site Emissions	**30.3**	23.1	1.2	1.1	**30.3**	23.1
2024 On-site Emissions	17.0	17.4	0.8	0.7	17.0	17.4
Phase 2						
2029 On-site Emissions	27.5	22.6	1.2	0.9	27.5	22.6
2030 On-site Emissions	34.6	14.2	0.3	0.3	34.6	14.2
2031 On-site Emissions	31.6	14.0	0.4	0.4	31.6	14.0
Localized Significance Thresholds (LSTs)	*664*	*91*	*5*	*3*	*664*	*91*
Above Thresholds?	**No**	**No**	**No**	**No**	**No**	**No**

Notes: See Appendix B for CalEEMod output sheets. **Bold** text indicates the highest potential daily emission level over the construction phases. Emissions might not add precisely due to rounding.
SCAQMD LST thresholds are based on:
1 acre of daily disturbed area. This is a very conservative estimate; the construction site is larger than 1 acre and construction activities would be distributed over a larger area, resulting in more disperse emissions. 25-meter separation distance to the closest residential/sensitive receptor. 25-meter separation distance to the closest worker receptor. SRA: 3.
PM_{10} and $PM_{2.5}$ LST thresholds are relevant to sensitive receptors that are reasonably likely to be present for ≥ 24 hours. Since off-site worker receptors are not expected to be present for this duration, significance for particulates does not apply to off-site worker receptors.
Source: SCAQMD 2009.

As shown in Table 3.2-7, implementation of MM AQ-1 would reduce on-site construction emissions for PM_{10} and $PM_{2.5}$ below the SCAQMD LSTs. Therefore, with implementation of MM AQ-1, impacts with regard to localized construction emissions would be less than *significant with mitigation*.

Impact Description (AQ-3)

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard.

AQ-3 Operational activities associated with the proposed Project – including the Phase 1 preliminary site development plan and the Phase 2 development program – would generate criteria air pollutant emissions that would be below South Coast Air Quality Management District (SCAQMD) mass daily thresholds and Localized Significance Thresholds (LSTs). Therefore, this impact would be *less than significant.*

As described in Section 3.2.3.2, *Methodology*, projects with impacts below the SCAQMD thresholds are not considered to contribute considerably to cumulative impacts. The following impact analysis considers peak daily and localized operational emissions generated from construction of the proposed Project, including the Phase 1 preliminary site development plan and the Phase 2 development program. These peak daily and localized operational emissions are evaluated against the SCAQMD's mass daily significance thresholds and LSTs, respectively, to determine whether operation of the proposed Project would contribute to a cumulatively considerable net increase of criteria pollutants.

Peak Daily Operational Emissions

Operational emissions associated with the proposed Project would include those generated by the addition of new vehicle trips (mobile emissions) under the Phase 2 development program, the use of landscaping maintenance equipment and consumer products (area source emissions), the use of natural gas (energy emissions), and the use of appliances. New vehicle trips would include employee trips as well as visitor trips to the Project site. As described in Section 3.12, *Population and Housing*, the large majority of employees would commute to the Project site from neighboring cities. Even with average commute times ranging from 10 to 35 minutes, these trips would not substantially contribute to operational emissions. Further, while it is likely that some employees and/or visitors would rely on alternative modes of transportation to travel to and from the Project site, these vehicle trip reductions were not considered in order to provide a conservative analysis.

Operational emissions associated with the proposed Project were estimated using CalEEMod. Mobile, energy, and area (i.e., consumer products, architectural coating, and landscape maintenance equipment) emissions are based on emission factors contained in CalEEMod. Maximum estimated daily operational emissions are detailed in Table 3.2-8.

Table 3.2-8. Maximum Estimated Operational Emissions Compared to SCAQMD Thresholds (lbs/day)

Emission Source	CO	VOC	NOx	SOx	PM10	PM2.5
Phase 1						
Area Emissions	17.9	6.7	0.2	0.0	0.1	0.1
Energy Emissions	0.4	0.1	0.7	0.0	0.1	0.1
Mobile Emissions	75.6	1.2	4.7	0.3	0.2	0.2
Phase 1 Total	**93.9**	**8.0**	**5.6**	**0.3**	**0.3**	**0.3**
2019 Baseline Emissions	260.9	9.5	20.7	0.7	0.5	0.5
Phase 1 Net Change	**-167.0**	**-1.5**	**-15.0**	**-0.4**	**-0.2**	**-0.2**
SCAQMD Thresholds of Significance	*550*	*55*	*55*	*150*	*150*	*55*
Above Thresholds?	**No**	**No**	**No**	**No**	**No**	**No**
Phase 2						
Area Emissions	18.0	9.9	0.2	0.0	0.1	0.1
Energy Emissions	0.9	0.2	1.4	0.0	0.1	0.1
Mobile Emissions	225.8	3.3	13.2	0.9	0.5	0.5
Phase 2 Total	**244.7**	**13.4**	**14.8**	**0.9**	**0.7**	**0.7**
2019 Baseline Emissions	260.9	9.5	20.7	0.7	0.5	0.5
Phase 2 Net Change	**-16.2**	**3.9**	**-5.9**	**0.2**	**0.2**	**0.2**
SCAQMD Thresholds of Significance	*550*	*55*	*55*	*150*	*150*	*55*
Above Thresholds?	**No**	**No**	**No**	**No**	**No**	**No**

Notes: Emissions might not add precisely due to rounding. Operational nontraffic, emissions were calculated using CalEEMod. Operational traffic emissions were calculated outside of CalEEMod, based on trips provided in the traffic study. Phase 2 emissions are cumulative - they reflect total emissions following the buildout of Phase 2. See Appendix B for CalEEMod output sheets.
Source: SCAQMD 2019b.

As shown in Table 3.2-8, the maximum emissions anticipated during operation of the Project would not exceed SCAQMD thresholds for NO_x, VOC, PM_{10}, $PM_{2.5}$, SO_x, or CO; therefore, this impact would be *less than significant* under the Phase 1 preliminary site development plan and the more general Phase 2 development program.

Localized Operational Emissions

Similar to construction, the LSTs listed in Section 3.2.3, *Impact Assessment and Methodology*, only apply to those emissions generated by on-site operational activities and do not apply to most of mobile emissions as these would occur largely off-site. As explained above, the LSTs for sensitive receptors within 25 meters of the Project site and are the most conservative LST thresholds and were used to represent the distance to the closest receptors. LSTs and estimates of on-site construction-related Project emissions for the proposed Project are shown in Table 3.2-9.

Table 3.2-9. On-site Operational Emissions (lbs/day) Compared to Localized Significance Thresholds for 25 Meter Receptors (Unmitigated)

Emission Source	Sensitive Receptors				Off-site Worker Receptors	
	CO	NO_2	PM_{10}	$PM_{2.5}$	CO	NO_2
Phase 1						
Area	17.9	0.2	0.1	0.1	17.9	0.2
Energy	0.4	0.7	0.1	0.1	0.4	0.7
Peak Daily Total	18.3	0.9	0.2	0.2	18.3	0.9
2019 Baseline Emissions	3.9	0.5	0.1	0.1	3.9	0.5
Phase 1 Net Change	**14.4**	**0.4**	**0.1**	**0.1**	**14.4**	**0.4**
Phase 2						
Area	18.0	0.2	0.1	0.1	18.0	0.2
Energy	0.9	1.4	0.1	0.1	0.9	1.4
Peak Daily Total	18.9	1.6	0.2	0.2	18.9	1.6
2019 Baseline Emissions	3.9	0.5	0.1	0.1	3.9	0.5
Phase 2 Net Change	**15.0**	**1.0**	**0.1**	**0.1**	**15.0**	**1.0**
LSTs (5-acre site at 25 meters)	*1,796*	*197*	*4*	*2*	*1,796*	*197*
Above Thresholds?	**No**	**No**	**No**	**No**	**No**	**No**

Notes: Emissions may not add precisely due to rounding.
Mobile emissions are primarily generated offsite; therefore, they are not included here.
SCAQMD LST thresholds are based on:
5-acre site. This is a conservative estimate; the proposed site is larger than 5 acres and activities would be distributed over a larger area, resulting in more disperse emissions. 25-meter separation distance to the closest residential/sensitive receptor. 25-meter separation distance to the closest worker receptor. SRA: 3.
Phase 2 emissions are cumulative - they reflect total emissions following the buildout of Phase 2.
PM_{10} and $PM_{2.5}$ LST thresholds are relevant to sensitive receptors that are reasonably likely to be present for greater than or equal to 24 hours. Since off-site worker receptors are not expected to be present for this duration, significance for particulates does not apply to off-site worker receptors.
Source: See Appendix B; SCAQMD 2009.

As presented therein, the operational emissions associated with the proposed Project would not exceed LSTs for CO, NO_x, PM_{10} and $PM_{2.5}$. These results indicate that the proposed Project would not generate levels of operational emissions that would adversely affect local air quality and public health. Therefore, this impact would *less than significant* for both Phase 1 preliminary site development plan and the Phase 2 development program.

Impact Description (AQ-4)

c) Expose sensitive receptors to substantial pollutant concentrations.

AQ-4 Construction-related diesel particulate matter (DPM) emissions – including emissions associated with the Phase 1 preliminary site development plan as well as emissions with the Phase 2 development program – would exceed the South Coast Air Quality Management District's (SCAQMD's) thresholds. However, this impact would be *less than significant with mitigation.*

The sensitive receptors listed in Table 3.2-4 would be exposed to construction and operational TAC emissions generated under the Phase 1 preliminary site development program and the Phase 2 development program. Construction health risks have been quantified as a part of a construction HRA prepared for the proposed Project (refer to Section 3.2.3.2, *Methodology*; see Appendix B). Because the proposed Project would include residential, medical office, general office, and health club uses that would not generate substantial TACs as part of its operations after development (as would be the case for an industrial use) and is not located in close proximity to TAC emitters, operational emissions of TACs are expected to be minor and operational health risks are discussed qualitatively in this EIR.

Construction

This analysis evaluated individual lifetime cancer risks and non-cancerous chronic hazard index (HIc) associated with DPM emissions during construction activities under the Phase 1 preliminary site development plan and the Phase 2 development program. The individual lifetime cancer risk represents the chance that an individual would contract cancer after exposure to the TACs emitted during construction of the proposed Project. Cancer risk is quantified by taking into consideration the TAC concentration, receptor breathing rate, duration and frequency of exposure, age sensitivity, and the TAC potency factor developed by OEHHA. The HIc evaluates the probability of TACs to cause adverse non-cancer health effects due to long-term exposure. The HIc is quantified by dividing the TAC concentration at a sensitive receptor location by the TAC reference exposure level (REL) established by OEHHA, where the REL is a concentration below which OEHHA has determined that no adverse health effect is anticipated. It should be noted that the maximum health risk value is only a calculation of risk – it does not necessarily mean anyone will contract cancer as a result of the proposed Project.

An acute HI, which evaluates the probability of TACs to cause adverse health effects due to short-term exposure, was not quantified for the proposed Project because the chief pollutant of concern is DPM, for which OEHHA has not established an acute REL. OEHHA states that an acute HI

analysis of the individual TAC components of diesel exhaust is warranted only in certain unusual situations such as when a nearby receptor is located above the emission release point (e.g., on a hillside or in a multi-story apartment building) (OEHHA 2015). Given the elevated location of the Project site, no unusual situations were identified for the proposed Project which would warrant an acute HI analysis.

Cancer risk and the HIc were quantified at the PMI, MEIR, on-site residences (i.e., existing Silverado Beach Cities Memory Care Community, proposed Assisted Living and Memory Care programs), and the existing Child Development Center within the Beach Cities Health Center (see Table 3.2-10). The PMI was determined to occur on the eastern boundary of the Project site during both Phase 1 and Phase 2 construction. It should be noted that the PMI represents the point of maximum impact regardless of whether a human receptor would be present at that location; no concentration higher than the PMI would occur from the proposed construction activities. The MEIR was determined to occur just east of the Project site, north of Towers Street during Phase 1 construction and south of Towers Street during Phase 2 construction (see Appendix B).

Since Phase 1 and Phase 2 construction activities would occur in different locations within the Project site boundaries, their contribution to cancer risk would be slightly different at the surrounding sensitive receptors. For example, the PMI would occur in a slightly different location during Phase 1 construction than for Phase 2 construction. To capture maximum impacts, cancer risks at the PMI, the MEIR, and on-site sensitive receptors were calculated individually for Phase 1 and for Phase 2 construction, and then the total Phase 1 and Phase 2 cancer risk was added for each receptor type. For example, cancer risk at the PMI for Phase 1 was added to cancer risk at the PMI for Phase 2 even though the Phase 1 PMI would occur in a slightly different location than the Phase 2 PMI. The same approach was done for the MEIR and other on-site receptors. This results in a conservative estimate (i.e., overstating) of cancer risk because the maximum impacts from Phase 1 and Phase 2 were added even though they would actually occur at slightly different locations. The HIc, at each receptor, was determined by taking the maximum calculated HIc from Phase 1 and Phase 2 construction (see Table 3.2-10).

The HRA conservatively assumed cancer risk exposure to off-site residential receptors starting in the third trimester before birth and an exposure duration of 3 years after birth during Phase 1 construction. Cancer risk for the same receptors during Phase 2 conservatively assumed exposure starting in the third year of life and an exposure duration of 3 years, overlapping the duration of Phase 2 construction. Cancer risk at the on-site Child Development Center within the Beach Cities Health Center was quantified from birth, for an exposure duration of 3 years for Phase 1 and Phase 2 construction. Cancer risk for residents of the existing Silverado Beach Cities Memory Care

Community were quantified assuming a starting age of 60 and an exposure duration of 3 years during Phase 1 construction. Cancer risk for Assisted Living and Memory Care residents of the proposed RCFE Building also assumed a starting age of 60 and an exposure duration of 3 years during Phase 2 construction.

Table 3.2-10. Cancer Risk and Non-Cancer Health Effects from Unmitigated Construction DPM Emissions

Location	MICR at the Modeled Locations			
	PMI	**MEIR**	**On-site Residences**	**Child Development Center**
Scenario	**Start - 3rd trimester Duration - 3 years**		**Start - 60 Duration - 3 years**	**Start - 0 Duration - 3 years**
Phase 1				
Annual Average Concentration (µg/m^3)	0.2498	0.2173	0.1694	0.1694
Cancer Risk	9.26E-05 (92.6 in a million)	8.05E-05 (80.5 in a million)	1.30E-06 (1.30 in a million)	6.05E-05 (60.5 in a million)
Annual Maximum Concentration (µg/m^3)	0.41021	0.35686	0.27815	0.27815
HIc	0.0820	0.0714	0.0556	0.0556
Phase 2				
Annual Average Concentration (µg/m^3)	0.13302	0.09413	0.01757	0.01757
Cancer Risk	1.14E-05 (11.4 in a million)	8.06E-06 (8.06 in a million)	1.35E-07 (0.13 in a million)	6.27E-06 (6.27 in a million)
Annual Maximum Concentration (µg/m^3)	0.1565	0.11075	0.02067	0.02067
HIc	0.0313	0.0222	0.00413	0.00413
Total				
Cancer Risk	1.04E-04 (104 in a million)	8.86E-05 (88.6 in a million)	1.44E-06 (1.44 in a million)	6.68E-05 (66.8 in a million)
SCAQMD Threshold	*1.00E-05 (10 in a million)*			
Above Threshold?	**Yes**	**Yes**	**No**	**Yes**
HIc	0.0820	0.0714	0.0556	0.0556
SCAQMD Threshold	*1.0*			
Above Thresholds?	**No**	**No**	**No**	**No**

Notes: MICR = maximum individual cancer risk
PMI = point of maximum impact
MEIR = maximum exposed individual resident
HIc = non-cancerous chronic hazard index
µg/m^3 = micrograms (one-millionth of a gram) per cubic meter air
Annual average emissions were used to quantify cancer risk. Annual maximum emissions were used to quantify non-cancer chronic impacts.
Additional explanatory details are provided in the construction HRA (see Appendix B).

As shown in Table 3.2-10, the unmitigated construction DPM emissions anticipated during construction of the proposed Project are not anticipated to exceed SCAQMD's HIc thresholds of 1.0 under any of the modeled locations and scenarios. The unmitigated construction DPM emissions would exceed SCAQMD thresholds for cancer risk (1.0E-05 or 10 in a million) during Project construction activities; therefore, health risk impacts to sensitive receptors from Project construction activities would be *potentially significant*. However, as described in *Residual Impacts* below, MM AQ-1 would require the use of Tier 4 engines for all construction equipment, except for crushing equipment.[4] The use of Tier 4 Final engines would reduce DPM emissions from combustion by 94 percent during Phase 1 construction and 79 percent during Phase 2 construction (see Table 3.2-11). Therefore, mitigated DPM emissions anticipated during construction activities would not exceed SCAQMD thresholds for cancer risk, and impacts would be *less than significant with mitigation*.

Operation

The potential for TACs to have an operational effect on sensitive receptors would occur if the proposed Project is located near an existing significant source of TACs or if it would generate TACs in quantities that may have an adverse effect on sensitive receptors. CARB identifies high-volume freeways and roads, dry cleaners, and large gas stations as potential sources of TACs, while typical sources of acutely and chronically hazardous TACs include industrial manufacturing processes and automotive repair facilities.

The proposed Project would not include any industrial uses that would generate substantial amounts of TACs and pose a risk to sensitive receptors in the vicinity of the Project site. Project operations would only result in minimal emissions of TACs from maintenance or other ongoing activities, such as from the use of architectural coatings or application of cleaning solutions. Therefore, emissions of toxic or carcinogenic air pollutants are not expected to occur in any substantial amounts in conjunction with operations under the Phase 1 preliminary site development plan or the more general Phase 2 development program.

The SCAQMD recommends that operational HRAs be conducted for substantial sources of operational DPM (e.g., truck stops and warehouse distribution facilities that generate more than 100 trucks per day or more than 40 trucks with operating transport refrigeration units) and has provided guidance for analyzing mobile source diesel emissions (SCAQMD 2003c). Operation of

[4] Crushing equipment is unique equipment. Although crushing equipment with Tier 4 Final engines may be available during Phase 2, in particular, this analysis conservatively assumes that crushing equipment would not be equipped with Tier 4 Final engines. This is a conservative assumption because the use of cleaner crushing equipment would further reduce health effects from what is presented in this analysis.

the proposed BCHD Healthy Living Campus would generate only minor amounts of diesel emissions from mobile sources, such as delivery trucks and occasional maintenance activities. These activities would not meet or exceed 100 trucks per day or more than 40 trucks with operating transport refrigeration units. Further, as previously described, truck trips associated with the proposed Project would be required to comply with the applicable provisions of the CARB regulations to minimize and reduce DPM and NO_x emissions from existing diesel trucks. Therefore, operation of the proposed Project would not be considered a substantial source of diesel particulates.

Typical sources of TACs that may affect future users of the proposed Project involve those same uses and activities identified above. According to CARB's Air Quality and Land Use Handbook, CARB recommends maintaining 500 feet of separation between residences and dry cleaners using perchloroethylene, 500 feet between residences and a major freeway that generates more than 100,000 ADT, and more than 50 feet from a typical gas station. The Project site is not located within these buffer zones from dry cleaners, freeways, or gas stations. The Project site is located approximately 370 feet southeast of the Shell gas station in the Redondo Village shopping center. While a dry cleaner service was historically located within the Redondo Village Shopping Center, this business permanently closed in 2018 (see Section 3.8, *Hazards and Hazardous Materials* for further details regarding the former dry cleaner).

Therefore, long-term operation of the proposed Project would not release substantial amounts of TACs, and future residents or visitors of the Project site would not be adversely affected by TAC emissions originating from off-site. TAC pollution controls would not be required for the proposed Project, and *less than significant* impacts on human health would occur.

Residual Impact

Toxic Air Contaminants Construction Emissions

Impacts associated with construction-related TAC emissions would be mitigated with implementation of specific components of MM AQ-1. MM AQ-1 requires the use of USEPA Tier 4 engines on all construction equipment (except crushing equipment), which have the strictest USEPA emissions requirement for off-highway diesel engines (refer to Section 3.2.2, *Regulatory Setting*). Cancer risk from Project construction emissions was modeled with the assumption of USEPA Tier 4 engines on all construction equipment, except crushing equipment (see Table 3.2-11). The annual average emissions presented in Table 3.2-11 were used to quantify cancer risk. Annual maximum emissions were used to quantify non-cancer chronic impacts.

Table 3.2-11. Cancer Risk and Non-Cancer Health Effects from Mitigated Construction DPM Emissions

Location	MICR at the Modeled Locations			
	PMI	MEIR	On-site Residences	Child Development Center
Scenario	**Start - 3rd trimester Duration - 3 years**		**Start - 60 Duration - 3 years**	**Start - 0 Duration - 3 years**
Phase 1				
Annual Average Concentration (µg/m^3)	0.0159	0.0138	0.0108	0.0108
Cancer Risk	5.88E-06 (5.88 in a million)	5.11E-06 (5.11 in a million)	8.27E-08 (0.08 in a million)	3.86E-06 (3.86 in a million)
Annual Maximum Concentration (µg/m^3)	0.02373	0.02064	0.01609	0.01609
HIc	0.00475	0.00413	0.00322	
Phase 2				
Annual Average Concentration (µg/m^3)	0.02841	0.02010	0.00375	0.00375
Cancer Risk	2.43E-06 (2.43 in a million)	1.72E-06 (1.72 in a million)	2.88E-08 (0.03 in a million)	1.34E-06 (1.34 in a million)
Annual Maximum Concentration (µg/m^3)	0.03098	0.02192	0.00409	0.00409
HIc	0.0062	0.00438	0.000818	0.000818
Total				
Cancer Risk	8.31E-06 (8.31 in a million)	6.38E-06 (6.38 in a million)	1.12E-07 (0.11 in a million)	5.19E-06 (5.19 in a million)
SCAQMD Threshold	***1.00E-05 (10 in a million)***			
Above Threshold?	**No**	**No**	**No**	**Yes**
HIc	0.0062	0.00438	0.00322	0.00322
SCAQMD Threshold	*1.0*			
Above Thresholds?	**No**	**No**	**No**	**No**

Notes: MICR = maximum individual cancer risk
PMI = point of maximum impact
MEIR = maximum exposed individual resident
HIc = non-cancerous chronic hazard index
µg/m^3 = micrograms (one-millionth of a gram) per cubic meter air
Additional explanatory details are provided in the construction HRA (see Appendix B).

The use of USEPA Tier 4 engines on all construction equipment, except crushing equipment, would reduce DPM emissions from combustion by 94 percent during Phase 1 construction and 79 percent during Phase 2 construction. With the use of Tier 4 engines as required under MM AQ-1, mitigated DPM emissions generated during Project construction activities would not exceed SCAQMD's significance threshold of 10 in a million (1E-05) for cancer risk (refer to Table 3.2-

11). Therefore, implementation of MM AQ-1 would reduce DPM emissions below SCAQMD thresholds for cancer risk. Project impacts to sensitive receptors due to temporary, localized construction DPM emissions would be *less than significant with mitigation*.

Impact Description (AQ-5)

c) Expose sensitive receptors to substantial pollutant concentrations.

AQ-5 The net increase in daily traffic, together with other cumulative traffic in the area, would generate increases in CO levels near local intersections. However, CO levels generated as a result of the proposed Project would not exceed Federal and State CO standards and would not result in CO hotspots. Therefore, this impact would be *less than significant.*

The potential for the proposed Project to cause or contribute to CO hotspots has been evaluated by comparing intersections within the vicinity of the Project site (both intersection geometry and traffic volumes) with the results of prior studies conducted by the SCAQMD in support of their AQMPs. As shown in Table 3.2-3, CO levels near the Project site are substantially below the Federal and State standards. Maximum CO levels in recent years are 1.8 ppm (1-hour average) and 1.6 ppm (8-hour average), which are well below the CAAQS of 20 ppm (1-hour average) and 9.0 ppm (8-hour average). CO levels decreased dramatically in the Basin with the introduction of the catalytic converter in 1975. No exceedances of CO have been recorded at monitoring stations in the Basin for some time, and the Basin is currently designated as a CO attainment area for the NAAQS and as a CO maintenance area for the CAAQS. Thus, it is unlikely that CO levels at Project-impacted intersections would result in an exceedance of these standards.

Additionally, SCAQMD conducted CO modeling to demonstrate attainment in the 2003 AQMP for the four worst-case intersections in the Basin, which are:

- Wilshire Boulevard & Veteran Avenue;
- Sunset Boulevard & Highland Avenue;
- La Cienega Boulevard & Century Boulevard; and
- Long Beach Boulevard & Imperial Highway.

In the 2003 AQMP, SCAQMD states that the intersection of Wilshire Boulevard & Veteran Avenue is the most congested intersection in Los Angeles County, with an ADT volume of approximately 100,000 vehicles per day. This intersection is located near the on- and off-ramps to I-405 in West Los Angeles. The evidence provided in Table 4-10 of Appendix V of the 2003 AQMP shows that the peak modeled CO concentration due to vehicle emissions at these four

intersections was 4.6 ppm (1-hour average) and 3.2 ppm (8-hour average) at Wilshire Boulevard and Veteran Avenue, exclusive of ambient background CO concentrations. When added to the existing background CO concentrations, the screening values would be 7.6 ppm (1-hour average) and 5 ppm (8-hour average), which are still well below the CAAQS of 20 ppm (1-hour average) and 9.0 ppm (8-hour average).

The Non-CEQA Intersection Operational Evaluation for the proposed Project demonstrates that four of the studied intersections within Redondo Beach and Torrance currently operate at LOS E or F during one or both of the AM and PM peak hours and five intersections are projected to operate at LOS E or F during one or both of the peak hours in 2032 (without the proposed Project) (see Appendix J). However, the highest total intersection ADT for any of these intersections would be approximately 89,300[5] vehicles at the intersection of Hawthorne Boulevard & Del Amo Boulevard, which is less than the recognized threshold of 100,000 vehicles per day. Therefore, it can be reasonably inferred that CO hotspots do not currently exist at any of the intersections within the Project study area for the Non-CEQA Intersection Operational Evaluation (see Appendix J).

Five intersections are projected to operate at LOS E or F during one or both peak periods under future operational year (2032) plus Project conditions (see Appendix J). These intersections are:

- Inglewood Avenue & 190th Street (PM peak hour);
- Flagler Lane & Beryl Street (AM and PM peak hour);
- Redbeam Avenue & Del Amo Boulevard (AM and PM peak hour);
- Anza Avenue & Del Amo Boulevard (PM peak hour); and
- Hawthorne Boulevard & Del Amo Boulevard (AM and PM peak hour).

The most heavily trafficked intersection within the vicinity of the Project site that would be affected by the proposed Project is Hawthorne Boulevard & Del Amo Boulevard, which currently experiences approximately 89,300 vehicle trips per day, or approximately 89.3 percent of the 100,000 vehicles per day experienced at the Wilshire Boulevard and Veteran Avenue intersection evaluated in the CO Plan for the SCAQMD's 2003 Air Quality Management Plan (see Appendix J). Under the Phase 2 development program, the proposed Project would increase average daily trips by approximately 376 trips compared to existing trip generation from the Project site. These additional trips would contribute minor amounts of CO emissions to the five intersections identified above, which do not produce CO hotspots from existing traffic. With the conservative assumption that all 376 trips per day generated by the proposed Project would pass through the Hawthorne Boulevard & Del Amo Boulevard intersection, this intersection would

[5] The ADT volume for the Hawthorne Boulevard & Del Amo Boulevard intersection was estimated using the standard assumption that AM peak hour traffic is approximately 8 percent of ADT.

experience approximately 89,676 vehicle trips per day. This would be approximately 89.7 percent of the 100,000 vehicles per day experienced at the Wilshire Boulevard & Veteran Avenue intersection, which does not generate a CO hotspot. As a result, CO concentrations are expected to be far less than those estimated in the 2003 AQMP for the most congested intersection in Los Angeles and would not create a CO hotspot or exceed the CAAQS for CO concentrations. Therefore, the proposed Project would neither directly result in nor substantially contribute to a CO hotspot and impacts would be *less than significant* during the Phase 2 development program. There would be *no impact* under the Phase 1 preliminary site development plan given the net reduction in vehicle trips.

Impact Description (AQ-6)

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

AQ-6 None of the land uses included in the proposed Project – including the Phase 1 preliminary site development plan and the Phase 2 development program – would result in objectionable odors that would affect a substantial number of people. Therefore, this impact would be *less than significant.*

According to SCAQMD's CEQA Air Quality Handbook (1993), objectionable odors are typically associated with industrial uses such as agricultural facilities (e.g., farms and dairies), refineries, wastewater treatment facilities, and landfills. The proposed Project would involve the construction of residential, outpatient medical office, community services, and restaurant uses. During construction, short-term, temporary odors would be expected from construction equipment and paving activities the duration of the two phases of construction. Operationally, odors that would be expected from the proposed Project would be typically associated with food smells (e.g., from the Blue Zones café, Assisted Living and Memory Care kitchens, outdoor dining areas, etc.) and solid waste storage. However, refuse associated with the proposed Project would be consistent with that generated by existing uses on-site and surrounding uses (e.g., existing restaurant and commercial uses in the Redondo Village Shopping Center and surrounding multi-family residences). Further, all refuse would be stored in covered containers and removed regularly consistent with the Redondo Beach's solid waste and recycling pick-up schedules. Therefore, the proposed Project would not be expected to generate objectionable odors that would affect a substantial number of people. Therefore, impacts associated with objectionable odors would be *less than significant* under the Phase 1 preliminary site development plan and the more general Phase 2 development program.

Cumulative Impacts

As described in Tables 3.0-1, 3.0-2, Table 3.0-3, and Table 3.0-4 in Section 3.0.2, *Cumulative Impacts,* there are several pending, approved, and recently completed development projects in Redondo Beach and Torrance as well as the neighboring Hermosa Beach and Manhattan Beach. Development of the proposed Project in conjunction with these projects would result in a cumulative increase in construction and operational criteria air pollutant emissions in the region.

Construction of the proposed Project would potentially overlap with other future projects in the immediate vicinity (e.g., a residential project at 190th Street & Fisk Lane in Redondo Beach and an industrial/warehouse complex in Torrance, which both have been approved). Construction-related emissions from the proposed Project and reasonably foreseeable future development projects (i.e., development projects that have not yet been approved or built) would be localized to the construction sites. It should be noted that Redondo Beach and Torrance have limited control over the timing or sequencing of many of the future development projects that may occur within the vicinity of the Project site. However, SCAQMD's mass daily emissions thresholds are designed to account for numerous construction projects occurring throughout the Basin. Further, as with the proposed Project, cumulative projects in the Redondo Beach, Torrance, Hermosa Beach, and Manhattan Beach as well as other cumulative projects within the wider regional vicinity would be subject to CARB's and SCAQMD's standards, rules, and thresholds to cumulatively control construction emissions.

With regard to cumulative effects related to operation of the proposed Project, the Basin is a nonattainment area for the State standards of O_3, PM_{10}, and $PM_{2.5}$ (refer to Table 3.2-2). In addition, the Basin is in nonattainment for the Federal standards of O_3 and $PM_{2.5}$. Any growth within Redondo Beach, Torrance, Hermosa Beach, and Manhattan Beach as well as the Los Angeles metropolitan area would contribute to existing exceedances of ambient air quality standards when taken as a whole with existing development.

Cumulative impacts to air quality are evaluated under two sets of thresholds for CEQA and SCAQMD, as described below.

According to CEQA Guidelines Sections 15064(h)(3):

> *A project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program (including an air quality attainment or management plan) that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located.*

As discussed in Impact AQ-1, the proposed Project – including the Phase 1 preliminary site development plan and the Phase 2 development program – would not conflict with the 2016 AQMP, which serves as the Basin's approved AQMP; therefore, the project's contribution to air quality impacts would not be cumulatively considerable under CEQA.

As described in Section 3.2.3.2, *Methodology*, SCAQMD's cumulative significance thresholds are the same are the same as project-specific significance thresholds. As such, the SCAQMD considers projects that do not exceed the project-specific thresholds to not contribute considerably to a cumulatively significant impact (SCAQMD 2003b).

Temporary construction emissions are discussed under Impacts AQ-2 and AQ-4. The construction emissions associated with the proposed Project would not exceed SCAQMD mass daily emissions thresholds, but would exceed LSTs for PM_{10} and $PM_{2.5}$. However, with implementation of MM AQ-1, construction emissions would be reduced, and mitigated construction emissions would not exceed LSTs. Similarly, implementation of MM AQ-1 would reduce construction DPM emissions below SCAQMD's threshold for cancer risks. As discussed under Impact AQ-3, the long-term operational emissions associated with the proposed Project would not exceed SCAQMD significance thresholds. Therefore, the construction and operational emissions associated with the proposed Project would not be cumulatively considerable under SCAQMD methodology.

Because the mitigated construction- and operation-generated emissions associated with the proposed Project would not exceed either the thresholds used to evaluate cumulative impacts to air quality, the proposed Project – including the Phase 1 preliminary site development plan and the Phase 2 development program – would not result in a considerable contribution to cumulative air quality impacts.