CHAPTER 2 SIGNIFICANT ENVIRONMENTAL EFFECTS OF THE PROPOSED PROJECT

This chapter of the Environmental Impact Report (EIR) provides discussion and analysis of the environmental impacts associated with The Villages – Escondido Country Club (Project) that were identified as significant environmental impacts. For each environmental topic, this EIR describes the existing conditions for that topic, details the existing regulatory setting for that topic, provides an analysis of the Project's environmental impact, and makes a determination as to whether the impact is significant. For each environmental topic, the EIR also analyzes the Project's cumulative impact, makes a determination of the significance of the Project's impact prior to mitigation, proposes mitigation measures that will avoid or reduce the Project's impact, and makes a final conclusion. The environmental issue areas addressed in Chapter 2 are as follows:

- 2.1 Air Quality
- 2.2 Biological Resources
- 2.3 Cultural Resources
- 2.4 Greenhouse Gas Emissions
- 2.5 Hazards and Hazardous Materials
- 2.6 Noise
- 2.7 Transportation and Traffic

2.1 Air Quality

This section addresses the potential air quality impacts associated with implementation of the Project. The analysis is based on the review of existing resources, technical data, and applicable laws, regulations, and guidelines, as well as the Air Quality Analysis Technical Report prepared by Dudek, included as Appendix 2.1-1 to this EIR.

2.1.1 Existing Conditions

The Project site is located in the northwest portion of the City of Escondido (City), along both sides of West Country Club Lane west of Nutmeg Street. The Project site itself currently has an address of 1800 West Country Club Lane and consists of approximately 109 acres. Figures 1-8 and 1-9, Regional Map and Vicinity Map, show the Project location within the County of San Diego (County) and the City. The Project is located in the northwest part of Escondido. Regionally, the City is situated in northern San Diego County, about 30 miles north of downtown San Diego via Interstate 15 (I-15). The Project is approximately 0.5 miles to the west of I-15, and about 2 miles north of State Route 78. The City of San Marcos boundary is approximately 0.2 miles to the southwest.

The Project is located within the San Diego Air Basin (SDAB) and is within the jurisdictional boundaries of the San Diego Air Pollution Control District (SDAPCD). The SDAB and SDAPCD are discussed further in Section 2.1.1.1, Environmental Setting (under "Ambient Air Quality Monitoring Data"), and Section 2.1.1.2, Regulatory Setting, respectively.

2.1.1.1 Environmental Setting

Climate and Topography

The weather of the San Diego region, as in most of Southern California, is influenced by the Pacific Ocean and its semi-permanent high-pressure systems that result in dry, warm summers and mild, occasionally wet winters. The average temperature ranges (in degrees Fahrenheit (°F)) from the mid-40s to the mid-70s. Most of the region's precipitation falls from November to April, with infrequent (approximately 10%) precipitation during the summer. The average seasonal precipitation along the coast is approximately 10 inches; the amount increases with elevation as moist air is lifted over the mountains (WRCC 2016).

The topography in the San Diego region varies greatly, from beaches on the west to mountains and desert on the east; along with local meteorology, the topography influences the dispersal and movement of pollutants in the SDAB. The mountains to the east prohibit dispersal of pollutants in that direction and help trap them in inversion layers.

The interaction of ocean, land, and the Pacific High Pressure Zone maintains clear skies for much of the year and influences the direction of prevailing winds (westerly to northwesterly). Local terrain is often the dominant factor inland, and winds in inland mountainous areas tend to blow through the valleys during the day and down the hills and valleys at night.

Pollutants and Effects

Criteria Air Pollutants

Criteria air pollutants are defined as pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. The federal and state standards have been set, with an adequate margin of safety, at levels above which concentrations could be harmful to human health and welfare. These standards are designed to protect the most sensitive persons from illness or discomfort. Pollutants of concern include ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter with an aerodynamic diameter equal to or less than 10 microns (PM_{10}; coarse particulate matter), particulate matter with an aerodynamic diameter equal to or less than 2.5 microns ($PM_{2.5}$; fine particulate matter), and lead. These pollutants, as well as toxic air contaminants (TACs), are discussed in the following text.[1] In California, sulfates, vinyl chloride, hydrogen sulfide, and visibility-reducing particles are also regulated as criteria air pollutants.

Ozone. O_3 is a strong-smelling, pale blue, reactive, toxic chemical gas consisting of three oxygen atoms. It is a secondary pollutant formed in the atmosphere by a photochemical process involving the sun's energy and O_3 precursors, such as hydrocarbons and oxides of nitrogen (NO_x). These precursors are mainly NO_x and volatile organic compounds (VOCs). The maximum effects of precursor emissions on O_3 concentrations usually occur several hours after they are emitted and many miles from the source. Meteorology and terrain play major roles in O_3 formation, and ideal conditions occur during summer and early autumn on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. O_3 exists in the upper atmosphere ozone layer as well as at the Earth's surface in the troposphere. The O_3 that the U.S. Environmental Protection Agency (EPA) and California Air Resources Board (CARB) regulate as a criteria air pollutant is produced close to ground level, where people live, exercise, and breathe. Ground-level O_3 is a harmful air pollutant that causes numerous adverse health effects and is thus considered "bad" O_3. Stratospheric O_3, or "good" O_3, occurs naturally in the upper atmosphere, where it reduces the amount of ultraviolet light (i.e., solar radiation) entering the earth's atmosphere. Without the protection of the beneficial stratospheric ozone layer, plant and animal life would be seriously harmed.

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

Nitrogen Dioxide. NO_2 is a brownish, highly reactive gas that is present in all urban atmospheres. The major mechanism for the formation of NO_2 in the atmosphere is the oxidation of the primary air pollutant nitric oxide, which is a colorless, odorless gas. NO_x plays a major role, together with VOCs, in the atmospheric reactions that produce O_3. NO_x is formed from fuel combustion under high temperature or pressure. In addition, NO_x is an important precursor to acid rain and may affect both terrestrial and aquatic ecosystems. The two major NO_x emissions sources are transportation and stationary fuel combustion sources such as electric utility and industrial boilers.

[1] The descriptions of each of the criteria air pollutants and associated health effects are based on the U.S. Environmental Protection Agency (EPA) "Criteria Air Pollutants" (2016a) and the CARB "Glossary of Air Pollutant Terms" (2016a).

NO_2 can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections (EPA 2016a).

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

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

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

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

Particulate Matter. Particulate matter pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter can form when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. $PM_{2.5}$ and PM_{10} represent fractions of particulate matter. Coarse particulate matter (PM_{10}) is about 1/7 the thickness of a human hair. Major sources of PM_{10} include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood-burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. Fine particulate matter ($PM_{2.5}$) is roughly 1/28 the diameter of a human hair. $PM_{2.5}$

results from fuel combustion (e.g., from motor vehicles and power generation and industrial facilities), residential fireplaces, and woodstoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as sulfur oxides (SO_x), NO_x, and VOCs.

$PM_{2.5}$ and PM_{10} pose a greater health risk than larger-size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. $PM_{2.5}$ and PM_{10} can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of substances such as lead, sulfates, and nitrates can cause lung damage directly or be absorbed into the blood stream, causing damage elsewhere in the body. Additionally, these substances can transport adsorbed gases such as chlorides or ammonium into the lungs, also causing injury. Whereas PM_{10} tends to collect in the upper portion of the respiratory system, $PM_{2.5}$ is so tiny that it can penetrate deeper into the lungs and damage lung tissue. Suspended particulates also damage and discolor surfaces on which they settle and produce haze and reduce regional visibility.

People with influenza, people with chronic respiratory and cardiovascular diseases, and the elderly may suffer worsening illness and premature death as a result of breathing particulate matter. People with bronchitis can expect aggravated symptoms from breathing in particulate matter. Children may experience a decline in lung function due to breathing in PM_{10} and $PM_{2.5}$ (EPA 2009).

Lead. Lead in the atmosphere occurs as particulate matter. Sources of lead emissions include leaded gasoline; the manufacturing of batteries, paints, ink, ceramics, and ammunition; and secondary lead smelters. Prior to 1978, mobile emissions were the primary source of atmospheric lead. Between 1978 and 1987, the phaseout of leaded gasoline reduced the overall inventory of airborne lead by nearly 95%. With the phaseout of leaded gasoline, secondary lead smelters, battery recycling, and manufacturing facilities are becoming lead emissions sources of greater concern.

Prolonged exposure to atmospheric lead poses a serious threat to human health. Health effects associated with exposure to lead include gastrointestinal disturbances, anemia, kidney disease, and in severe cases, neuromuscular and neurological dysfunction. Of particular concern are low-level lead exposures during infancy and childhood. Such exposures are associated with decrements in neurobehavioral performance, including intelligence quotient performance, psychomotor performance, reaction time, and growth. Children are highly susceptible to the effects of lead.

Volatile Organic Compounds. Hydrocarbons are organic gases that are formed from hydrogen and carbon and sometimes other elements. Hydrocarbons that contribute to formation of O_3 are referred to and regulated as VOCs (also referred to as reactive organic gases). Combustion engine exhaust, oil refineries, and fossil-fueled power plants are the sources of hydrocarbons. Other sources of hydrocarbons include evaporation from petroleum fuels, solvents, dry-cleaning solutions, and paint.

The primary health effects of VOCs result from the formation of O_3 and its related health effects. High levels of VOCs in the atmosphere can interfere with oxygen intake by reducing the amount of available oxygen through displacement. Carcinogenic forms of hydrocarbons, such as benzene, are considered TACs. There are no separate health standards for VOCs as a group.

Non-Criteria Air Pollutants

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

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

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

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

Sensitive Receptors

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. People most likely to be affected by air pollution include children, the elderly, athletes, and people with cardiovascular and chronic respiratory diseases. Facilities and structures where these air-pollution-sensitive people live or spend considerable amounts of time are known as "sensitive receptors." Land uses where air-pollution-sensitive individuals are most likely to spend time include schools and schoolyards, parks and playgrounds, daycare centers, nursing homes, hospitals, and residential communities (sensitive sites or sensitive land uses) (CARB 2005).

The Project is located on an existing golf course surrounded by single-family residential neighborhoods. Therefore, the nearest sensitive receptor is adjacent to the property boundary and within 20 feet of the Project in all directions.

San Diego Air Basin Attainment Status

Pursuant to the 1990 federal Clean Air Act Amendments, EPA classifies air basins (or portions thereof) as "attainment" or "nonattainment" for each criteria air pollutant, based on whether the National Ambient Air Quality Standards (NAAQS) have been achieved. Generally, if the recorded concentrations of a pollutant are lower than the standard, the area is classified as "attainment" for that pollutant. If an area exceeds the standard, the area is classified as "nonattainment" for that pollutant. As previously discussed, these standards are set by EPA or CARB for the maximum level of a given air pollutant that can exist in the outdoor air without unacceptable effects on human health or the public welfare. If there is not enough data available to determine whether the standard is exceeded in an area, the area is designated as "unclassified" or "unclassifiable." The designation of "unclassifiable/attainment" means that the area meets the standard or is expected to be meet the standard despite a lack of monitoring data. Areas that achieve the standards after a nonattainment designation are redesignated as maintenance areas and must have approved Maintenance Plans to ensure continued attainment of the standards. The California Clean Air Act, like its federal counterpart, called for the designation of areas as "attainment" or "nonattainment," but based on the California Ambient Air Quality Standards (CAAQS) rather than the NAAQS.

The portion of the SDAB where the Project site is located is designated by EPA as an attainment area for the 1997 8-hour NAAQS for O_3 and as a marginal nonattainment area for the 2008 8-hour NAAQS for O_3. The SDAB is designated in attainment for all other criteria pollutants under the NAAQS with the exception of PM_{10}, which was determined to be unclassifiable. The SDAB is also currently designated nonattainment for O_3, PM_{10}, and $PM_{2.5}$ under the CAAQS. It is designated attainment for the CAAQS for CO, NO_2, SO_2, lead, and sulfates.

Table 2.1-1, SDAB Attainment Classification, summarizes the SDAB's federal and state attainment designations for each of the criteria pollutants.

Ambient Air Quality Monitoring Data

CARB, air districts, and other agencies monitor ambient air quality at approximately 250 air quality monitoring stations across the state. Local ambient air quality is monitored by SDAPCD. The SDAPCD operates a network of ambient air monitoring stations throughout San Diego County, which measure ambient concentrations of pollutants and determine whether the ambient air quality meets the CAAQS and the NAAQS. The SDAPCD monitors air quality conditions at 11 locations throughout the SDAB.

The nearest SDAPCD-operated monitoring station at which criteria pollutants data are collected is the Escondido–East Valley Parkway monitoring station, which is approximately

3.6 miles southeast of the Project site. This site was used to show the background ambient air quality for O_3, $PM_{2.5}$, PM_{10}, CO, and NO_2. The closest monitoring site for SO_2 was the El Cajon monitoring station located at 10537 Floyd Smith Drive, El Cajon, which is about 25 miles south of the site. The most recent background ambient air quality data and number of days exceeding the ambient air quality standards from 2013 to 2015 are presented in Table 2.1-2, Local Ambient Air Quality Data.

2.1.1.2 Regulatory Setting

Federal

Criteria Air Pollutants

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

The NAAQS describe acceptable air quality conditions designed to protect the health and welfare of the citizens of the nation. The NAAQS (other than for O_3, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. NAAQS for O_3, NO_2, SO_2, PM_{10}, and $PM_{2.5}$ are based on statistical calculations over 1- to 3-year periods, depending on the pollutant. The Clean Air Act requires EPA to reassess the NAAQS at least every 5 years to determine whether adopted standards are adequate to protect public health based on current scientific evidence. States with areas that exceed the NAAQS must prepare a State Implementation Plan (SIP) that demonstrates how those areas will attain the standards within mandated time frames.

Hazardous Air Pollutants

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

State

Criteria Air Pollutants

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

CARB has established the CAAQS, which are generally more restrictive than the NAAQS. The CAAQS describe adverse conditions; that is, pollution levels must be below these standards before a basin can attain the standard. Air quality is considered "in attainment" if pollutant levels are continuously below the CAAQS and violate the standards no more than once each year. The CAAQS for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, PM_{10}, $PM_{2.5}$, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. The NAAQS and CAAQS are presented in Table 2.1-3, Ambient Air Quality Standards.

Toxic Air Contaminants

The state Air Toxics Program was established in 1983 under AB 1807 (Tanner). The California TAC list identifies more than 700 pollutants, of which carcinogenic and noncarcinogenic toxicity criteria have been established for a subset of these pollutants pursuant to the California Health and Safety Code. In accordance with AB 2728, the state list includes the (federal) HAPs. The Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588) seeks to identify and evaluate risk from air toxics sources; however, AB 2588 does not regulate air toxics emissions. TAC emissions from individual facilities are quantified and prioritized. "High-priority" facilities are required to perform a health risk assessment, and if specific thresholds are exceeded, are required to communicate the results to the public in the form of notices and public meetings.

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

California Environmental Quality Act

Primary environmental legislation in California is found in the California Environmental Quality Act (CEQA) and its implementing guidelines (CEQA Guidelines), which require that projects with potential adverse effects (or impacts) on the environment undergo environmental review. Adverse environmental impacts are typically mitigated as a result of the environmental review process in accordance with existing laws and regulations.

California Health and Safety Code Section 41700

This section of the California Health and Safety Code states that a person shall not discharge from any source whatsoever quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or that endanger the comfort, repose, health, or safety of any of those persons or the public; or that cause, or have a natural tendency to cause, injury or damage to business or property. This section also applies to sources of objectionable odors.

Local

San Diego Air Pollution Control District

While CARB is responsible for the regulation of mobile emission sources within the state, local air quality management districts and air pollution control districts are responsible for enforcing standards and regulating stationary sources. The Project area is located within the SDAB and is subject to the guidelines and regulations of SDAPCD.

In San Diego County, O_3 and particulate matter are the pollutants of main concern, because exceedances of the CAAQS for those pollutants are experienced here in most years. For this reason, the SDAB has been designated as a nonattainment area for the state PM_{10}, $PM_{2.5}$, and O_3 standards. The SDAB is also a federal O_3 attainment (maintenance) area for the 1997 8-hour O_3 standard, an O_3 nonattainment area for the 2008 8-hour O_3 standard, and a CO maintenance area (western and central part of the SDAB only, including the Project area).

Federal Attainment Plans

In December 2016, SDAPCD also adopted an update to the 2008 *Eight-Hour Ozone Attainment Plan for San Diego County* (2016 8-Hour O_3 Attainment Plan; SDAPCD 2016a). The 2016

8-Hour O_3 Attainment Plan indicates that local controls and state programs would allow the region to reach attainment of the federal 8-hour O_3 standard (2008 O_3 NAAQS) by 2018 (SDAPCD 2016a). In this plan, SDAPCD relies on the *Regional Air Quality Strategy for the San Diego Air Basin* (RAQS; SDAPCD 2016a) to demonstrate how the region will comply with the federal O_3 standard. The RAQS details how the region will manage and reduce O_3 precursors (NO_x and VOCs) by identifying measures and regulations intended to reduce these pollutants. The control measures identified in the RAQS generally focus on stationary sources; however, the emissions inventories and projections in the RAQS address all potential sources, including those under the authority of CARB and EPA. Incentive programs for reduction of emissions from heavy-duty diesel vehicles, off-road equipment, and school buses are also established in the RAQS.

Currently, the County is designated as a moderate nonattainment area for the 2008 NAAQS. As documented in the 2016 8-Hour O_3 Attainment Plan, the County has a likely chance of reaching attainment due to the transition to low-emission cars, stricter new source review rules (SDAPCD 2016a), and continuing requirements of general conformity for military growth and the San Diego International Airport. The County will also continue emission control measures, including ongoing implementation of existing regulations in O_3 precursor reduction to stationary and area-wide sources, subsequent inspections of facilities and sources, and the adoption of laws requiring Best Available Retrofit Control Technology for control of emissions (SDAPCD 2016a).

State Attainment Plans

SDAPCD and the San Diego Association of Governments (SANDAG) are responsible for developing and implementing the clean air plan for attainment and maintenance of the ambient air quality standards in the SDAB. The RAQS was initially adopted in 1991, and is updated every 3 years, most recently in 2016 (SDAPCD 2016a). The RAQS outlines SDAPCD's plans and control measures designed to attain the CAAQS for O_3. The RAQS relies on information from CARB and SANDAG, including mobile and area source emissions, as well as information regarding projected growth in San Diego County and the cities in the county, to forecast future emissions and then determine from that the strategies necessary for the reduction of emissions through regulatory controls. CARB mobile source emission projections and SANDAG growth projections are based on population, vehicle trends, and land use plans developed by San Diego County and the cities in the County as part of the development of their general plans (SANDAG 2017).

In December 2016, SDAPCD adopted the revised RAQS for San Diego County. Since 2007, the San Diego region has reduced daily VOC emissions and NO_x emissions by 3.9% and 7.0% respectively; SDAPCD expects to continue reductions through 2035 (SDAPCD 2016b). These reductions were achieved through implementation of six VOC control measures and three NO_x control measures adopted in SDAPCD's 2009 RAQS (SDAPCD 2009a); in addition, SDAPCD is considering additional measures, including three VOC measures and four NO_x control measures to reduce 0.3 daily tons of VOC and 1.2 daily tons of NO_x, provided they are found to be feasible region-wide. In addition, SDAPCD has implemented nine incentive-based programs, has worked with SANDAG to implement regional transportation control measures, and has reaffirmed the state emissions offset repeal.

In regard to particulate matter emissions reduction efforts, in December 2005, SDAPCD prepared a report titled "Measures to Reduce Particulate Matter in San Diego County" to address implementation of Senate Bill 656 (which required additional controls to reduce ambient concentrations of PM_{10} and $PM_{2.5}$) in San Diego County (SDAPCD 2005). In the report, SDAPCD evaluated the implementation of source-control measures that would reduce particulate matter emissions associated with residential wood combustion; various construction activities including earthmoving, demolition, and grading; bulk material storage and handling; carry-out and track-out removal and cleanup methods; inactive disturbed land; disturbed open areas; unpaved parking lots/staging areas; unpaved roads; and windblown dust (SDAPCD 2005).

SDAPCD Rules and Regulations

As stated previously, SDAPCD is responsible for planning, implementing, and enforcing federal and state ambient standards in the SDAB. The following rules and regulations apply to all sources in the jurisdiction of SDAPCD, and would apply to the Project:

1. **SDAPCD Regulation IV: Prohibitions; Rule 51: Nuisance.** Prohibits the discharge, from any source, of such quantities of air contaminants or other materials that cause or have a tendency to cause injury, detriment, nuisance, annoyance to people and/or the public, or damage to any business or property (SDAPCD 1969).
2. **SDAPCD Regulation IV: Prohibitions; Rule 55: Fugitive Dust.** Regulates fugitive dust emissions from any commercial construction or demolition activity capable of generating fugitive dust emissions, including active operations, open storage piles, and inactive disturbed areas, as well as track-out and carry-out onto paved roads beyond a project site (SDAPCD 2009b).
3. **SDAPCD Regulation IV: Prohibitions; Rule 67.0.1: Architectural Coatings.** 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 (SDAPCD 2015a).

San Diego Association of Governments

SANDAG is the regional planning agency for San Diego County and serves as a forum for regional issues relating to transportation, the economy, community development, and the environment. SANDAG serves as the federally designated metropolitan planning organization for San Diego County. With respect to air quality planning and other regional issues, SANDAG has prepared *San Diego Forward: The Regional Plan* (Regional Plan) for the San Diego region (SANDAG 2015). The Regional Plan combines the big-picture vision for how our region will grow over the next 35 years with an implementation program to help make that vision a reality. The Regional Plan, including its Sustainable Communities Strategy, is built on an integrated set of public policies, strategies, and investments to maintain, manage, and improve the transportation system so that it meets the diverse needs of the San Diego region through 2050.

In regard to air quality, the Regional Plan sets the policy context in which SANDAG participates in and responds to the air district's air quality plans and builds off the air district's air quality plan processes that are designed to meet health-based criteria pollutant standards in several ways (SANDAG 2015). First, it complements air quality plans by providing guidance and incentives for public agencies to consider best practices that support the technology-based control measures in air quality plans. Second, the Regional Plan emphasizes the need for better coordination of land use and transportation planning, which heavily influences the emissions inventory from the transportation sectors of the economy. This also minimizes land use conflicts, such as residential development near freeways, industrial areas, or other sources of air pollution.

On September 23, 2016, SANDAG's Board of Directors adopted the final 2016 *Regional Transportation Improvement Program* (RTIP). The 2016 RTIP is a multi-billion-dollar, multi-year program of projects for major transportation projects in the San Diego region. Transportation projects supported by federal, state, and TransNet (the San Diego transportation sales tax program) funds must be included in an approved RTIP. The programming of locally funded projects also may be programmed at the discretion of the agency. The 2016 RTIP covers five fiscal years and incrementally implements the Regional Plan (SANDAG 2016).

City of Escondido

Environmental Quality Regulations

The City has promulgated its Environmental Quality Regulations (EQR) in Escondido Municipal Code Chapter 33, Article 47, Division 1, Section 33-924: Coordination of CEQA, quality of life standards, and growth management provisions (City of Escondido 2015). The EQR outlines criteria for CEQA projects regarding consistency with the City's Public Facilities Master Plans and General Plan. The specific EQR criteria applicable to this Project are discussed in further detail in Section 2.1.2, Analysis of Project Effects and Determination as to Significance.

General Plan

The *City of Escondido General Plan* (General Plan; City of Escondido 2012) includes various goals and policies designed to help improve air quality within the City. As discussed in the

General Plan, policies pertaining to improving air quality are addressed in multiple chapters of the General Plan.

The goals and policies for improving air quality in the General Plan are provided in this subsection.

Land Use and Community Form Element

1. Community Character

Goal 1: A community composed of distinct residential neighborhoods, business districts, and employment centers, whose urban form reflects the natural environmental setting.

Community Character Policy 1.9: Promote development in downtown, at transit stations, and other key districts to accommodate a mix of land uses and configure uses to promote walkability, bicycling, and transit uses, reducing the need for the automobile.

4. Neighborhood Maintenance & Preservation

Neighborhood Maintenance & Preservation Policy 4.3: Integrate pedestrian-friendly features, promote walkability, and work with residents to enhance existing neighborhood character and aesthetics.

7. Mixed Use Overlay Zones

Goal 7: Districts containing a mix of uses enabling residents to live close to their jobs, shopping, entertainment, and recreation, reducing the need to use the automobile and promoting walking and healthy lifestyles.

Mixed Use Overlay Policy 7.1: Designate areas for the development of mixed-use projects in a pedestrian-friendly environment integrating housing with retail, office, and service uses (childcare, health, etc.) consistent with the General Plan's vision and long-term growth needs.

Mobility and Infrastructure Element

Goal 1: An accessible, safe, convenient, and integrated multi-modal network that connects all users and moves goods and people within the community and region efficiently.

3. Pedestrian Network

Pedestrian Network Policy 3.2: Develop and manage pedestrian facilities to maintain an acceptable Level of Service as defined in the Pedestrian Master Plan.

Pedestrian Network Policy 3.3: Maintain a pedestrian environment that is accessible to all and that is safe, attractive, and encourages walking.

4. Bicycle Network

Bicycle Network Policy 4.2: Develop and manage bicycle facilities to maintain an acceptable Level of Service as defined in the Bicycle Master Plan.

Bicycle Network Policy 4.3: Promote bicycling as a common mode of transportation and recreation to help reduce traffic congestion and improve public health.

Resource Conservation Element

7. Air Quality and Climate Protection

Goal 7: Improved air quality in the city and the region to maintain the community's health and reduce greenhouse gas emissions that contribute to climate change.

Air Quality and Climate Protection Policy 7.3: Require that new development projects incorporate feasible measures that reduce construction and operational emissions (City of Escondido 2012).

Climate Action Plan

The City adopted the *Escondido Climate Action Plan* (E-CAP) in December 2013 (City of Escondido 2013). Although the E-CAP directly quantifies greenhouse gas (GHG) emissions and identifies policies to reduce GHG emissions, associated air quality co-benefits would accrue with implementation of many of the policies designed to reduce GHG emissions. For example, the following E-CAP emission reduction measures are anticipated to achieve air quality co-benefits:

R2-T1: Land Use Based Trips and VMT [vehicle miles traveled] Reduction Policies (City of Escondido 2013, Page 4-9): This measure would focus land development projects around smart growth, complete streets, mixed-use projects, and transit oriented development to reduce VMT.

R2-T2: Bicycle Master Plan (City of Escondido 2013, Page 4-12): This measure would improve the bicycle network and facilities and reduce VMT.

R2-T3: Transit Improvements (City of Escondido 2013, Page 4-13): This measure would expand the public transportation system and reduce VMT.

R2-T4: Transportation Demand Management (City of Escondido 2013, Page 4-14): This measure would encourage ride-sharing, carpooling, and alternative modes of transportation, thus reducing VMT.

R2-E1: Residential Energy Efficiency Requirements (City of Escondido 2013, Page 4-18): This measure would include installation of solar water heaters to replace natural gas water heaters.

R2-E2: Commercial Energy Efficiency Requirements (City of Escondido 2013, Page 4-19): This measure would include installation of solar water heaters to replace natural gas water heaters.

R2-E3: Residential Renewable Energy Requirements (City of Escondido 2013, Page 4-20): This measure would include installation of thermal water heaters to replace natural gas water heaters.

R2-E4: Commercial Renewable Energy Requirements (City of Escondido 2013, Page 4-21): This measure would include installation of thermal water heaters to replace natural gas water heaters.

R2-E5: Residential Energy Retrofits (City of Escondido 2013, Page 4-22): This measure would include installation of solar water heaters to replace natural gas water heaters.

R2-E6: Commercial Energy Retrofits (City of Escondido 2013, Page 4-23): This measure would include installation of solar water heaters to replace natural gas water heaters.

R1-A2: Electric Landscaping Equipment (City of Escondido 2013, Page 4-25): This measure would replace combustion landscaping equipment with electric equipment.

R2-C1: Construction Emissions Reductions (City of Escondido 2013, Page 4-32): This measure would reduce the amount of time construction equipment is used, replace combustion equipment with electric, and support a reduction in VMT (City of Escondido 2013).

2.1.2 Analysis of Project Effects and Determination as to Significance

2.1.2.1 Methodology and Assumptions

Air quality impacts associated with the Project are related to emissions from short-term construction and long-term operations. Construction may affect air quality as a result of construction equipment emissions, fugitive dust from grading and earthmoving, and emissions from vehicles driven to and from the Project site by construction workers and material delivery trucks. Operational emissions would result primarily from vehicle exhaust (i.e., mobile sources).

The Air Quality Technical Report (Appendix 2.1-1) was used to complete this section. Details regarding the methodology used are described in Appendix 2.1-1.

Construction

Emissions from the construction phase of the Project were estimated using the California Emissions Estimator Model (CalEEMod), Version 2016.3.1, available online (www.caleemod.com).

For the purposes of modeling, it was assumed that construction of the Project would commence in January 2018 and would last approximately 66 months, ending in June 2023. The analysis contained herein is based on the assumptions outlined in Table 2.1-4, Construction Phasing Assumptions (duration of phases is approximate). The Project schedule was based on information provided by the Project applicant for all horizontal construction. For the vertical construction phases, the CalEEMod default assumptions were used based on the land-use types.

Demolition of the existing Country Club building and associated structures would occur first. Following demolition, preparation of the Project site (i.e., grading, soil import, trenching for dry and wet utilities, and surface improvements) for vertical building construction would commence; it was assumed that site preparation activities would occur in four phases.[2] Three paving phases to represent off-site improvement areas on Country Club Lane, El Norte Parkway, and Nutmeg Street also were modeled. One building construction phase and one architectural coating phase were modeled, in order to represent continual building construction and painting without interruptions in the schedule.

The construction equipment mix used for estimating the Project's construction emissions is based on information provided by the applicant for all horizontal construction and is shown in Table 2.1-5, Construction Scenario Assumptions. For the vertical construction phases, equipment was estimated using the CalEEMod defaults. Construction phasing specifications and the construction equipment mix were provided by the Project applicant. For the analysis, it was assumed that heavy construction equipment would be operating at the site for approximately 8 hours per day, 5 days per week (22 days per month) during Project construction. CalEEMod defaults were assumed for construction worker trips and vendor trips. The hauling trips were calculated based on the amount of material imported during the three import phases and assuming a 16-cubic-yard truck. CalEEMod defaults were assumed for construction worker, vendor, and haul truck trip lengths. The Project is anticipated to import a total of 180,000 cubic

[2] The first phase would include Village 1 and the Village Center. Phase two would include Village 2. Phase three would include the northeast parcel of Village 3, bordered by Country Club Lane, La Brea Street, La Mirada Avenue, and Nutmeg Lane. Phase four would include the southwest portion of Village 3 bordered by La Brea Street, Country Club Lane, and Firestone Drive.

yards of soil. The total area graded for the Project was estimated using the CalEEMod defaults. There will be demolition of the existing Country Club building and associated structures, which was estimated to total 55,297 square feet.

Construction of Project components would be subject to SDAPCD Rule 55, Fugitive Dust Control. This rule requires that construction of Project components include steps to restrict visible emissions of fugitive dust beyond the property line (SDAPCD 2009b). Compliance with Rule 55 would limit fugitive dust (PM_{10} and $PM_{2.5}$) that may be generated during grading and construction activities. Construction of Project components would also be subject to SDAPCD Rule 67.0.1 – 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 (SDAPCD 2015a). The Project would use architectural coatings that would not exceed 50 grams per liter (g/L) for interior applications and 100 g/L for exterior applications.

A detailed depiction of the construction schedule—including information regarding subphases, demolition, and equipment used during each subphase—is included in Appendix 2.1-1. The information contained in Appendix 2.1-1 was used as CalEEMod model inputs.

Blasting Emissions

Blasting would occur in 2018, during all four phases of the Project's site-preparation-related construction activities. The estimated emissions of NO_x, CO, and SO_x from explosives used for blasting were determined using emission factors in Section 13.3 (Explosives Detonation) of AP-42 (EPA 1980), and PM_{10} and $PM_{2.5}$ emissions were determined using Section 11.9 of AP-42 (EPA 1998). According to AP-42, "Unburned hydrocarbons also result from explosions, but in most instances, methane is the only species that has been reported" (EPA 1980); methane is not a VOC, and a methane emission factor has not been determined for ammonium nitrate/fuel oil.

The daily NO_x, CO, and SO_x emissions from blasting of explosives were calculated using the following equation:

Rock blasted (cubic yards/day) × 1 pound explosive/cubic yard ÷ 2,000 pounds/ton × emission factor (pounds/ton of explosive) = pounds/day

The PM_{10} and $PM_{2.5}$ emissions from blasting of explosives were calculated using the following equation:

$$E = k \times 0.000014 \times A1.5$$

Where:

E = pounds of PM_{10} or $PM_{2.5}$ per blast
k = particle size multiplier (= 0.52 for PM_{10} and 0.03 for $PM_{2.5}$)
A = horizontal area shifted by each blast in square feet

It should be noted that the AP-42 emission factors for explosives are based on studies conducted in the mid-1970s, over 35 years ago; however, no updated factors for blasting explosives were available. In addition, the PM_{10} and $PM_{2.5}$ emission factors from Section 11.9 of AP-42 were derived from methods for blasting operations at western surface coal mines, including those activities associated with removal of soil overburden. Thus, these factors may overestimate emissions for blasting of hard rock. All blasting activity will comply with Section 96.1.5601.2 of the County's Consolidated Fire Code.[3]

Table 2.1-6, Blasting Characteristics, shows the anticipated blasting quantities during construction.

Emission Reduction Strategies

The construction emission reduction strategies and project design feature (PDF) shown in Table 2.1-7 were quantitatively assumed in CalEEMod for purposes of estimating mitigated Project emissions (implementation of these strategies is not reflected in the unmitigated Project emissions). The Project includes the following PDF, which is included in Appendix 2.1-1:

PDF-AQ-1 The Project would include an on-site speed limit of 15 miles per hour to reduce fugitive dust emissions during construction.

Operation

Area Sources

CalEEMod was used to estimate operational emissions from area sources, including emissions from consumer product use, architectural coatings, and landscape maintenance equipment. Emissions associated with natural gas usage in space heating and water heating are calculated in the building energy use module of CalEEMod, as described in the following text. The model also

3 The City's Ordinance No. 2013-13 adopts the 2013 California Fire Code and the County of San Diego's 2011 Consolidated Fire Code.

calculates the emissions from the combustion of wood or natural gas in stoves and fireplaces. The Project is designed to only use natural gas stoves and fireplaces.

Consumer products are chemically formulated products used by household and institutional consumers, including detergents; cleaning compounds; polishes; floor finishes; cosmetics; personal care products; home, lawn, and garden products; disinfectants; sanitizers; aerosol paints; and automotive specialty products. Other paint products, furniture coatings, or architectural coatings are not considered consumer products (CAPCOA 2016). Consumer product VOC emissions are estimated in CalEEMod based on the floor area of residential buildings and on the default factor of pounds of VOC per building square foot per day. The CalEEMod default values for consumer products were assumed.

VOC off-gassing emissions result from evaporation of solvents contained in surface coatings such as in paints and primers using during building maintenance. CalEEMod calculates the VOC evaporative emissions from application of surface coatings based on the VOC emission factor, the building square footage, the assumed fraction of surface area, and the reapplication rate. The VOC emission factor is based on the VOC content of the surface coatings, and SDAPCD's Rule 67.0.1 (Architectural Coatings) governs the VOC content for interior and exterior coatings. The model default reapplication rate of 10% of area per year is assumed. Consistent with CalEEMod defaults, it is assumed that the surface area for painting equals 2.7 times the floor square footage, with 75% assumed for interior coating and 25% assumed for exterior surface coating (CAPCOA 2016). CalEEMod defaults were assumed for the application of architectural coatings during operation as that would not be controlled by the Project applicant. As a conservative measure, CalEEMod default VOC contents were assumed for the reapplication of architectural coatings.

Landscape maintenance includes fuel combustion emissions from equipment such as lawn mowers, rototillers, shredders/grinders, blowers, trimmers, chainsaws, and hedge trimmers. The emissions associated from landscape equipment use are estimated based on CalEEMod default values for emission factors (grams per square foot of building space per day) and number of summer days (when landscape maintenance would generally be performed) and winter days. For San Diego County, the average annual number of summer days is estimated at 180 days (CAPCOA 2016).

Energy Sources

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

CalEEMod default values for energy consumption for each land use were applied for the Project analysis. The energy use from non-residential land uses is calculated in CalEEMod based on the California Commercial End-Use Survey database. The program uses data collected during the Residential Appliance Saturation Survey to develop energy intensity values (electricity and natural gas usage per square foot per year) for residential buildings. Energy use in buildings is divided by the program into end use categories subject to Title 24 requirements (end uses associated with the building envelope, such as the heating, ventilation, and air-conditioning system; water heating system; and integrated lighting) and those not subject to Title 24 requirements (such as appliances, electronics, and miscellaneous “plug-in” uses).

Title 24 of the California Code of Regulations serves to enhance and regulate California’s building standards. The most recent amendments to Title 24, Part 6, referred to as the 2016 standards, became effective on January 1, 2017.

The Project is committed to exceeding the 2016 Title 24 energy standards by 15%. The Project is also implementing rooftop solar photovoltaic energy production, which would cover 70% of residential building electricity use and 50% of the Village Center’s electricity use. Although the Project includes these energy saving measures, as discussed above, electricity consumption is not accounted for when calculating criteria pollutant emissions.

Mobile Sources

Following the completion of construction activities, the Project would generate criteria pollutant emissions from mobile sources (vehicular traffic), as a result of the residents and workers from the Project. The daily vehicle miles traveled were estimated using the CalEEMod default values for each land use type. The average weekday trip rate was taken from the Transportation Impact Analysis study for the report (Appendix 2.7-1 of this EIR). The average weekday trip rate was then scaled up or down according to the CalEEMod default ratio according to each land use. The estimated trip lengths and trip modes were based on CalEEMod defaults for every land use. CalEEMod then was used to estimate emissions from proposed vehicular sources (refer to Appendix 2.1-1). CalEEMod default data, including temperature, trip characteristics, variable start information, emissions factors, and trip distances, were conservatively used for the model inputs. Project-related traffic was assumed to include a mixture of vehicles in accordance with the model outputs for traffic. Emission factors representing the vehicle mix and emissions for 2023 were conservatively used to estimate emissions associated with vehicular sources. The 2023 operational year represents the first year of Project build-out and would represent maximum daily operational emissions.

As discussed in detail in the Specific Alignment Plan (Appendix 2.7-1), the Project is designed to improve the pedestrian and bicyclist network in the neighborhood through the use of a walking and bicycling trail system that connects all residential villages, the Village Center, and the adjacent neighborhoods together. The proposed Class II bike lanes would provide a high level of comfort for cyclists, and the intersection improvements (stop/signal control, crosswalks, bulbouts) proposed at Gary Lane, Firestone Drive and Nutmeg Street would work in conjunction with the proposed trails to encourage and facilitate pedestrian circulation along the corridor. All on-site Project roadways would include street and intersection improvements that operate as traffic calming measures. The Project would also include traffic calming measures for a few of the surrounding streets and intersections.

Emission Reduction Strategies

The operational emission reduction strategies and PDFs shown in Table 2.1-8 were quantitatively assumed in CalEEMod for purposes of estimating mitigated Project emissions (implementation of these strategies is not reflected in the unmitigated Project emissions). The Project includes the following PDFs, which are included in Appendix 2.1-1:

PDF-AQ-2 Exceed 2016 Title 24 building energy efficiency standards by 15%. Additionally, the Project will include electricity-saving features, such as an increase in energy efficiency above the 2016 Title 24 standards and solar photovoltaic systems that satisfy 70% of the electricity demand for residential buildings and 50% of the electricity demand for the Village Center.

PDF-AQ-3 Traffic-calming measures for all new streets and existing affected streets and intersections.

PDF-AQ-4 Improve the pedestrian network of the community by constructing an integrated walking and bicycling trail that would connect the villages with the Village Center and adjacent community.

Thresholds of Significance

CEQA Guidelines

The State of California has set forth guidelines to address the significance of air quality impacts in Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.). See Section 2.1.2.2 for these thresholds. Appendix G of the CEQA Guidelines indicates that, where available, the significance criteria established by the applicable air quality management district or pollution control district may be relied on to determine whether the project would have a significant impact on air quality.

City of Escondido Environmental Quality Regulations

The EQR, as established in the City's Municipal Code Chapter 33, Article 47, provide guidelines for implementing CEQA in connection with proposed land use development projects that are located within the City (City of Escondido 2015). Of particular note, the EQR identify thresholds to evaluate if additional analysis is required to determine whether a project would result in significant impacts under CEQA. Air quality impacts are addressed in Division 1, Section 33-924(a)(6) of the EQR. In accordance with the EQR, a project would require a technical study if, after mitigation, its air quality impacts for fixed, mobile, or construction sources within the General Plan area would exceed the thresholds identified in Table 2.1-9, City of Escondido Daily Emission Screening Level Criteria.

2.1.2.2 Guidelines for the Determination of Significance

For purposes of this EIR, Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.) will apply to the direct, indirect, and cumulative impact analyses. A significant impact to air quality would result if the Project would:

A. Conflict with or obstruct the implementation of the RAQS and/or applicable portions of the SIP.

B. Violate any air quality standard or contribute substantially to an existing or projected air quality violation.

C. Expose sensitive receptors to substantial pollutant concentrations.

D. Create objectionable odors affecting a substantial number of people

2.1.2.3 Analysis

A. Would the Project conflict with or obstruct the implementation of the RAQS and/or applicable portions of the SIP?

As mentioned in Section 2.1.1.2 under "Local," SDAPCD and SANDAG are responsible for developing and implementing the clean air plans for attainment and maintenance of the ambient air quality standards in the basin—specifically, the SIP and RAQS.[4]

The federal O_3 maintenance plan, which is part of the SIP, was adopted in 2012 (SDAPCD 2012). This maintenance plan outlines SDAPCD's approach to maintaining its attainment status

[4] For the purpose of this discussion, the relevant federal air quality plan is the 2016 O_3 Attainment Plan (SDAPCD 2016a). The RAQS is the applicable plan for purposes of state air quality planning. Both plans reflect growth projections in the basin.

with the 1997 O_3 NAAQS. The most recent federal ozone attainment plan was adopted in 2016 for the 2008 O_3 NAAQS. As discussed in Section 2.1.1.2, this attainment plan outlines SDAPCD's strategy for the County to meet the 2008 O_3 NAAQS by 2018, because the SDAB is currently designated as moderate nonattainment. The SIP includes a demonstration that current strategies and tactics will maintain acceptable air quality in the basin based on the NAAQS. The RAQS was initially adopted in 1991 and is updated every 3 years (most recently in 2016). The RAQS outlines SDAPCD's plans and control measures designed to attain the CAAQS for O_3.

The SIP and RAQS rely on information from CARB and SANDAG, including mobile and area source emissions as well as information regarding projected growth in the County as a whole and the cities in the County, to project future emissions and determine the strategies necessary for the reduction of emissions through regulatory controls. CARB mobile source emission projections and SANDAG growth projections are based on population, vehicle trends, and land use plans developed by the County and the cities in the County as part of the development of their general plans.

Although the City and SDAPCD do not provide guidance regarding the analysis of impacts associated with air quality plan conformance, the County's Guidelines for Determining Significance and Report and Format and Content Requirements – Air Quality discuss conformance with the RAQS (County of San Diego 2007). The guidance indicates that if a project, in conjunction with other projects, contributes to growth projections that would exceed SANDAG's growth projections for the region, the project would conflict with the RAQS (County of San Diego 2007).

Here, the Project site is currently zoned Residential Urban I, which allows up to 5.5 dwelling units per acre (City of Escondido 2012). The proposed Project involves construction of 392 single-family dwelling units on 109.3 acres, resulting in a density of 3.6 dwelling units per acre. Because the proposed zoning change would decrease the density of dwelling units per acre from the existing zoning of the site, the Project's population would already be accounted for in the underlying growth estimates for the basin used as the basis for the RAQS update. Also, the anticipated increase in worker vehicle source emissions is not anticipated to result in air quality impacts that were not envisioned in the growth projections and RAQS.

Although the Project would be consistent with the underlying growth projections of the General Plan as shown above, the existing land use (golf course) was included in the current RAQS, which did not provide growth in residential units, population, or vehicle trips. While re-designation of this land use represents minor adjustments to the Project site, the residential land use would represent new designations on this site that were not previously considered in the RAQS and SIP.. Therefore, impacts would be considered **potentially significant** (**Impact AQ-1**).

B. Would the Project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

To evaluate the Project's impacts, the construction and operational emissions of the Project were quantified and compared to the City's EQR (see Table 2.1-9) (City of Escondido 2015).

Construction

Construction of the Project would result in a temporary addition of pollutants to the local airshed caused by soil disturbance, fugitive dust emissions, and combustion pollutants from on-site construction equipment, as well as from off-site trucks hauling construction materials. Construction emissions can vary substantially day to day, depending on the level of activity, the specific type of operation, and for dust, the prevailing weather conditions.

Pollutant emissions associated with construction activity were quantified using CalEEMod. Default values provided by the program were used where detailed Project information was not available. A detailed depiction of the construction schedule—including information regarding phasing, equipment used during each phase, haul trucks, vendor trucks, and worker vehicles—is included in Section 2.1.2 under "Construction." The information contained in Appendix 2.1-1 (Appendix A) was used as CalEEMod inputs.

Implementation of the Project would generate construction-related air pollutant emissions from three general activity categories: entrained dust, equipment and vehicle exhaust emissions, and architectural coatings. Entrained dust results from the exposure of ground surfaces to wind from the direct disturbance and movement of soil, resulting in PM_{10} and $PM_{2.5}$ emissions. The Project is subject to SDAPCD Rule 55, Fugitive Dust Control. This rule requires that the Project take steps to restrict visible emissions of fugitive dust beyond the property line. Compliance with Rule 55 would limit fugitive dust (PM_{10} and $PM_{2.5}$) that may be generated during grading and construction activities. To account for dust control measures in the calculations, it was assumed that the active sites would be watered at least two times daily, resulting in an approximately 55% reduction of particulate matter.

Exhaust from internal combustion engines used by construction equipment and hauling trucks (dump trucks) and vendor trucks (delivery trucks) and worker vehicles would result in emissions of NO_x, ROC, CO, SO_x, PM_{10}, and $PM_{2.5}$. The application of architectural coatings, such as exterior/interior paint and other finishes, would also produce VOC emissions; however, the contractor is required to procure architectural coatings from a supplier in compliance with the requirements of SDAPCD Rule 67.0.1, 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. VOC content used for this analysis include 100 g/L for exterior coatings and use of 50 g/L for interior coatings, as outlined in SDAPCD Rule 67.0.1.

The Project's blasting-related activities will also generate combustion related emissions, as previously discussed. The blasting will also generate fugitive dust emissions in the form of PM_{10} and $PM_{2.5}$. Table 2.1-10, Estimated Maximum Daily Unmitigated Construction Criteria Air Pollutant Emissions, shows the estimated maximum daily construction emissions associated with the construction of the Project without mitigation. Complete details of the emissions calculations are provided in Appendix 2.1-1 of this document.

As shown in Table 2.1-10, daily construction emissions would not exceed the significance thresholds for VOCs, CO, SO_x, PM_{10}, or $PM_{2.5}$; however, daily emissions would exceed the significance thresholds for NO_x. The emissions in 2018 include the blasting emissions from the grading phase; however, the majority of the NO_x exceedance is from construction equipment. Maximum VOC emissions would occur in 2023 due to the Project's architectural-coating-related activities. Therefore, impacts during construction would result in a **potentially significant** impact (**Impact AQ-2**).

Operation

The Project involves development of 392 residential units and the Village Center, including a convenience store, Clubhouse, health club, pool, and community farm. Operation of the Project would generate VOC, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$ emissions from mobile sources, including vehicle trips from future residents; area sources, including the use of consumer products, architectural coatings for repainting, and landscape maintenance equipment; and energy sources. As discussed in Section 2.1.2 under "Construction," pollutant emissions associated with long-term operations were quantified using CalEEMod. Project-generated mobile source emissions were estimated in CalEEMod based on Project-specific trip rates. CalEEMod default values were used to estimate emissions from the Project area and energy sources.

Table 2.1-11 presents the maximum daily area, energy, and mobile source emissions associated with operation (Year 2023) of the Project. The values shown are the maximum summer or winter daily emissions results from CalEEMod. Details of the emission calculations are provided in Appendix 2.1-1.

As shown in Table 2.1-11, the combined daily area, energy, and mobile source emissions would not exceed the City's operational thresholds for VOC, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$. Impacts associated with Project-generated operational criteria air pollutant emissions would be **less than significant**.

C. Would the Project expose sensitive receptors to substantial pollutant concentrations?

Air quality varies as a direct function of the amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions. Air quality problems arise when the rate of pollutant emissions exceeds the rate of dispersion. Reduced visibility, eye irritation, and adverse health impacts upon those persons termed "sensitive receptors" are the most serious hazards of existing air quality conditions in the area. Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. People most likely to be affected by air pollution, as identified by CARB, include children, the elderly, athletes, and people with cardiovascular and chronic respiratory diseases; however, for the purposes of this analysis, residents are also considered sensitive receptors. As such, sensitive receptors include residences, schools, playgrounds, childcare centers, athletic facilities, long-term healthcare facilities, rehabilitation centers, convalescent centers, and retirement homes. The closest off-site sensitive receptors to the Project are residential land uses located adjacent to the Project site boundary.

Health Impacts of Toxic Air Contaminants

In addition to impacts from criteria pollutants, project impacts may include emissions of pollutants identified by the state and federal government as TACs or HAPs. State law has established the framework for California's TAC identification and control project, which is generally more stringent than the federal project, and is aimed at TACs that are a problem in California. The state has formally identified more than 200 substances as TACs, including the federal HAPs, and is adopting appropriate control measures for sources of these TACs.

The greatest potential for TAC emissions during construction would be diesel particulate emissions from heavy equipment operations and heavy-duty trucks, and the associated health impacts to sensitive receptors. The closest sensitive receptors would be the residents adjacent to the golf course. Accordingly, a health risk assessment (HRA) was performed to evaluate the risk to sensitive receptors from Project-generated TAC emissions. The following paragraphs describe the findings of the HRA, and the detailed assessment is provided in Appendix 2.1-1.

Health effects from carcinogenic air toxics are usually described in terms of cancer risk. The SDAPCD recommends an incremental cancer risk threshold of 10 in a million.[5] "Incremental cancer risk" is the likelihood that a person continuously exposed to concentrations of TACs resulting from a project over a 70-year lifetime will contract cancer based on the use of standard risk-assessment methodology. The cancer burden is determined for the population located within

[5] The City does not specify HRA guidance or thresholds within its Environmental Quality Regulations (City of Escondido, Section 33.47.1.33-924).

the zone of impact, defined as the area within the one in one million cancer risk isopleth for a 70-year exposure. The Hotspots Analysis and Reporting Program Version 2 (HARP2) was used to generate an isopleth, which is a line of a constant value, showing the area exposed to a cancer risk above one in one million. Cancer burden was conservatively estimated by using the distance of the furthest receptor within the one in a million isopleth as the radius of a zone of impact.

Some TACs increase non-cancer health risk due to long-term (chronic) exposures. The Chronic Hazard Index (HIC) is the sum of the individual substance chronic hazard indices for all TACs affecting the same target organ system. The HIC estimates for all receptor types used EPA's "OEHHA Derived"[6] calculation method, which uses high-end exposure parameters for the inhalation and next top two exposure pathways and uses mean exposure parameters for the remaining pathways for non-cancer risk estimates. The HIC is the sum of the individual substance chronic hazard indices for all TACs affecting the same target organ system.[7] A hazard index less than one (1.0) means that adverse health effects are not expected. Within this analysis, noncarcinogenic exposures of less than 1.0 are considered less than significant. The SDAPCD recommends a HIC significance threshold of 1.0 (Project increment).

The air dispersion modeling methodology was based on generally accepted modeling practices of SDAPCD (SDAPCD 2015b). Air dispersion modeling was performed using EPA's AERMOD, Version 16216r, modeling system (computer software) with the Lakes Environmental Software implementation/user interface, AERMOD View, Version 9.3.0. The HRA followed the Office of Environmental Health Hazard Assessment (OEHHA) 2015 guidelines (OEHHA 2015) and SDAPCD Tier-1 techniques to calculate the health risk impacts at all receptors including the nearby residential receptors, the nearest school, and off-site worker receptors, as further discussed below. The dispersion modeling included the use of standard regulatory default options. AERMOD parameters were selected consistent with the SDAPCD and EPA guidance and identified as representative of the Project site and Project activities. Principal parameters of this modeling are presented in Table 2.1-12.

This HRA evaluated impacts nesting a grid of receptors with initial rectangular 50-meter (165-foot) spacing to focus on the nearby residences and occupational exposures. This receptor analysis utilized 100-meter (330-foot), 250-meter (820-foot), and then 500-meter (1,650-foot) resolution nested grids covering a total 5.95-kilometer by 3.60-kilometer (3.70-mile by 2.24-mile) rectangular area. This nested grid network of receptors established an impact analysis area where locations of maximum cancer risk and short- and long-term hazard indices would occur. This analysis also

6 "OEHHA" refers to EPA's Office of Environmental Health Hazard Assessment.

7 The Chronic Hazard Index estimates for all receptor types used the OEHHA Derived calculation method (OEHHA 2015).

placed discretely located Cartesian receptors to evaluate the maximum exposure for schools. Residences are located immediately adjacent to the construction Project site's property boundaries.

Health risk calculations were performed using CARB's HARP2 Air Dispersion Modeling and Risk Tool (Version 17052). AERMOD was run with all construction area sources emitting 1 gram per second for each individual source area meter to obtain necessary "unity concentration," input values for HARP2. These dispersion factor values that were determined for each source using AERMOD were imported into HARP2, then multiplied by annual emissions to determine ground-level concentrations for each pollutant. These ground-level concentrations were then used to estimate the long-term cancer health risk to an individual, and the non-cancer chronic and acute health indices.

Construction of Project components would require use of heavy-duty construction equipment, which is subject to a CARB Airborne Toxics Control Measure for in-use diesel construction equipment to reduce diesel particulate emissions, and would involve use of diesel trucks, which are also subject to an Airborne Toxics Control Measure. Construction of Project components would occur in four phases lasting a total of 5.5 years and would be periodic and short term within each phase. Following completion of construction activities, Project-related TAC emissions would cease. The results of the HRA for health risks incurred during construction are provided in Table 2.1-13, Summary of Maximum Cancer and Chronic Health Risks .

As shown in Table 2.1-13, the health risks resulting from Project-generated TAC emissions would be below the levels of significance for construction. The TAC emissions from construction would be short term in nature and would cease after the construction period. As such, impacts from exposure of sensitive receptors to Project-related TAC emissions would be **less than significant**.

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

Health Impacts of Carbon Monoxide

As described previously, exposure to high concentrations CO can result in dizziness, fatigue, chest pain, headaches, and impairment of central nervous system functions. Mobile-source impacts, including those related to CO, occur essentially on two scales of motion. Regionally, Project-related construction travel would add to regional trip generation and increase the vehicle miles traveled (VMT) within the local airshed and the SDAB. Locally, construction traffic would be added to the roadway system in the vicinity of the Project site. Although the SDAB is currently an attainment area for CO, there is a potential for the formation of microscale CO "hotspots" to occur immediately around points of congested traffic. Hotspots can form if such traffic occurs during periods of poor atmospheric ventilation, is composed of a large number of vehicles cold-started and operating at pollution-inefficient speeds, and/or is operating on roadways already crowded with non-Project traffic. Because of continued improvement in vehicular emissions at a rate faster than the rate of vehicle growth and/or congestion, the potential for CO hotspots in the SDAB is steadily decreasing.

CO transport is extremely limited and disperses rapidly with distance from the source. Under certain extreme meteorological conditions, however, CO concentrations near a congested roadway or intersection may reach unhealthy levels, affecting sensitive receptors such as residents, school children, hospital patients, and the elderly. Typically, high CO concentrations are associated with urban roadways or intersections operating at an unacceptable level of service (LOS). Projects contributing to adverse traffic impacts may result in the formation of CO hotspots.

To verify that the Project would not cause or contribute to a violation of the CO standards, a screening evaluation of the potential for CO hotspots was conducted. The California Department of Transportation (Caltrans) and the University of California, Davis, Institute of Transportation Studies Transportation Project-Level Carbon Monoxide Protocol (CO Protocol; Caltrans 2010) were followed. CO hotspots are typically evaluated when (1) the LOS of an intersection or roadway decreases to LOS E or worse, (2) signalization and/or channelization is added to an intersection, and (3) sensitive receptors such as residences, schools, and hospitals are located in the vicinity of the affected intersection or roadway segment.

The Transportation Impact Analysis prepared for the Project (Appendix 2.7-1) analyzed Existing, Existing Plus Project, and Horizon Year 2035 conditions at 17 intersections near the Project site. The results of the LOS assessment show that under Existing Plus Project conditions, nine of the 17 study intersections are forecast to operate at unacceptable LOS (LOS E or worse) during the peak hours. As shown in Appendix 2.1-1, the nine key study intersections according to the criteria above are (1) Centre City Parkway at Nutmeg Street (LOS F in AM and PM); (2) Country Club Lane and Golden Circle Drive (LOS F in AM and PM); (3) Country Club Lane and Gary Lane (LOS F in AM); (4) Country Club Lane and Nutmeg Street (LOS F in AM and PM); (5) El Norte Parkway and Woodland Parkway (LOS F in AM and LOS E in PM); (6) El Norte Parkway and Country Club Lane (LOS F in AM and PM); (7) El Norte Parkway and Nutmeg Street and Nordahl Road (LOS E in PM); (8) El Norte Parkway and Centre City Parkway (LOS E in AM and PM); and (9) El Norte Parkway and Broadway (LOS F in AM and PM). The remaining key intersections currently operate at an acceptable LOS during the AM and PM peak hours in both Near Term and Horizon scenarios.

For each scenario (Existing, Existing Plus Project, and Horizon Year 2035), the screening evaluation presents LOS and whether a quantitative CO hotspots analysis may be required. According to the CO Protocol, there is a cap on the number of intersections that need to be analyzed for any one project. For a single project with multiple intersections, only the three intersections representing the worst LOS ratings of the Project, and, to the extent they are different intersections, the three intersections representing the highest traffic volumes, need be analyzed. For each intersection failing a screening test as described in this protocol, an additional intersection should be analyzed (Caltrans 2010).

Based on the CO hotspot screening evaluation (Appendix 2.1-1), nine intersections that were at LOS E or worse were evaluated based on their geometries. The nine intersections represented three different types of geometries. The intersection with the highest volume was selected to represent each type of geometry; the intersections selected were Country Club Lane and Golden Circle Drive, Country Club Lane and Nutmeg Street, and El Norte Parkway and Nutmeg Street. All three intersections were evaluated in the Near Term and Horizon scenarios for CO Hotspots (consistent with the traffic analysis). For each intersection, the highest volume (AM or PM) was used in the analysis as the worst-case scenario. The potential impact of the Project on local CO levels was assessed at these intersections with the Caltrans CL4 interface based on the California LINE Source Dispersion Model (CALINE4), which allows microscale CO concentrations to be estimated along each roadway corridor or near intersections (Caltrans 1998a).

The emissions factor represents the weighted average emissions rate of the local San Diego County vehicle fleet expressed in grams per mile per vehicle. Consistent with the traffic scenario, emissions factors for 2023 and 2035 were used for the two intersections. Emissions factors were predicted by EMFAC2014 based on a 5 mph average speed for all of the intersections for approach and departure segments. The hourly traffic volume anticipated to travel on each link, in units of vehicles per hour, was based on information provided by the traffic consultant and modeling assumptions are outlined in Appendix 2.1-1.

Four receptor locations were modeled at each intersection to determine CO ambient concentrations. A receptor was assumed on the sidewalk at each corner of the modeled intersections, to represent the future possibility of extended outdoor exposure. CO concentrations were modeled at these locations to assess the maximum potential CO exposure that could occur in 2023 and 2035. A receptor height of 5.9 feet (1.8 meters) was used in accordance with Caltrans recommendations for all receptor locations (Caltrans 1998b).

The South Coast Air Quality Management District (SCAQMD) guidance recommends using the highest 1-hour measurement in the last 3 years as the projected future 1-hour CO background concentration for the analysis. A CO concentration of 3.8 parts per million by volume (ppm) was recorded in 2014 for the Escondido monitoring station in San Diego and was assumed in the

CALINE4 model for 2023 and 2035 (CARB 2016b). To estimate an 8-hour average CO concentration, a persistence factor of 0.70, as calculated based on SCAQMD guidance (SCAQMD 1993), was applied to the output values of predicted concentrations in ppm at each of the receptor locations.

The results of the model are shown in Table 2.1-14, CALINE4 Predicted Carbon Monoxide Concentrations. Model input and output data are provided in Appendix 2.1-1. As shown in Table 2.1-14, the maximum CO concentration predicted for the 1-hour averaging period at the studied intersections would be 3.6 ppm, which is below the 1-hour CO CAAQS of 20 ppm (CARB 2016b). The maximum predicted 8-hour CO concentration of 2.53 ppm at the studied intersections would be below the 8-hour CO CAAQS of 9.0 ppm (CARB 2013). Neither the 1-hour nor the 8-hour CAAQS would be equaled or exceeded at any of the intersections studied. Accordingly, the Project would not cause or contribute to violations of the CAAQS and would not result in exposure of sensitive receptors to localized high concentrations of CO. As such, impacts to sensitive receptors with regard to potential CO hotspots resulting from Project contribution to cumulative traffic-related air quality impacts would be **less than significant**.

Health Impacts of Other Criteria Air Pollutants

Construction of the Project would result in NO_x emissions that exceed the City's mass-emission thresholds; the emissions of all other criteria pollutants were found to be less than significant during the construction phase. Specific VOCs may be TACs; however, the specific VOCs associated with Project construction are unknown. Some VOCs would be associated with motor vehicles and construction equipment, while others are associated with architectural coatings, the emissions of which would not result in the exceedances of the City's threshold as shown in Table 2.1-9. Generally, the VOCs in architectural coatings are of relatively low toxicity. Additionally, SDAPCD Rule 67.0.1 restricts the VOC content of coatings for both construction and operational applications.

Operation of the Project would not result in emissions that exceed the City's emission thresholds for any criteria air pollutants. Regarding VOCs, some VOCs would be associated with motor vehicles and construction equipment, while others are associated with architectural coatings, the emissions of which would not result in the exceedances of the City's thresholds as shown in Table 2.1-9. Generally, the VOCs in architectural coatings are of relatively low toxicity.

In addition, VOCs and NO_x are precursors to O_3, for which the SDAB is designated as nonattainment with respect to the NAAQS and CAAQS. The health effects associated with O_3, as discussed in Section 2.1.1.1 under "Pollutants and Effects," are generally associated with reduced lung function. The contribution of VOCs and NO_x to regional ambient O_3 concentrations is the result of complex photochemistry. The increases in O_3 concentrations in the SDAB due to

O_3 precursor emissions tend to be found downwind from the source location to allow time for the photochemical reactions to occur. However, the potential for exacerbating excessive O_3 concentrations would also depend on the time of year that the VOC emissions would occur because exceedances of the O_3 NAAQS and CAAQS tend to occur between April and October, when solar radiation is highest.

The holistic effect of a single project's emissions of O_3 precursors is speculative due to the lack of quantitative methods to assess this impact. Nonetheless, the VOC and NO_x emissions associated with Project construction could minimally contribute to regional O_3 concentrations and the associated health impacts. As described in Section 2.1.1.1, O_3 health impacts are associated with respiratory irritation, which may be experienced by nearby receptors during the periods of heaviest use of off-road construction equipment. However, these operations would be relatively short term. Nevertheless, health impacts would be considered potentially significant during construction. Due to the minimal contribution during operation, as well as the existing good air quality in coastal San Diego areas, operational health impacts would be **less than significant**.

Construction and operation of the Project would not exceed thresholds for PM_{10} or $PM_{2.5}$ and would not contribute to exceedances of the NAAQS and CAAQS for particulate matter. The Project would also not result in substantial DPM emissions during construction and operation and therefore would not result in significant health effects related to DPM exposure. Due to the Project's minimal contribution of particulate matter during construction and operation, health impacts would be **less than significant**.

Regarding NO_2, according to the construction emissions analysis, construction of the Project would contribute to exceedances of the NAAQS and CAAQS for NO_2 during construction. As described in Section 2.1.1.1, NO_2 and NO_x health impacts are associated with respiratory irritation, which may be experienced by nearby receptors during the periods of heaviest use of off-road construction equipment. Additionally, off-road construction equipment would be operating at various portions of the site and would not be concentrated in one portion of the site at any one time. Construction of the Project would not require any stationary emission sources that would create substantial localized NO_x impacts. Therefore, although the construction-related health impacts would be short term and temporary, they would result in a **potentially significant** impact (**Impact AQ-3**).

D. Would the Project create objectionable odors affection a substantial number of people?

Odors are a form of air pollution that is most obvious to the general public. Odors can present significant problems for both the source and surrounding community. Although offensive odors seldom cause physical harm, they can be annoying and cause concern.

The State of California Health and Safety Code, Division 26, Part 4, Chapter 3, Section 41700 and SDAPCD Rule 51, commonly referred to as public nuisance law, prohibits emissions from any source whatsoever in such quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to the public health or damage to property. Projects required to obtain permits from SDAPCD are evaluated by SDAPCD staff for potential odor nuisance, and conditions may be applied (or control equipment required) where necessary to prevent occurrence of public nuisance.

Section 6318 of the San Diego County Zoning Ordinance requires that all commercial and industrial uses be operated so as not to emit matter causing unpleasant odors that are perceptible by the average person at or beyond any lot line of the lot containing said uses. Section 6318 goes on to further provide specific dilution standards that must be met "at or beyond any lot line of the lot containing the uses" (County of San Diego 1979). SDAPCD Rule 51 (Public Nuisance) also prohibits emission of any material that causes nuisance to a considerable number of persons or endangers the comfort, health, or safety of any person. A project that proposes a use that would produce objectionable odors would be deemed to have a significant odor impact if it would affect a considerable number of off-site receptors. Odor issues are very subjective by the nature of odors themselves and due to the fact that their measurements are difficult to quantify. As a result, this guideline is qualitative, and will focus on the existing and potential surrounding uses and location of sensitive receptors.

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

Odors would be potentially generated from vehicles and equipment exhaust emissions during construction of the Project. Potential odors produced during construction would be attributable to concentrations of unburned hydrocarbons from tailpipes of construction equipment, architectural coatings, and asphalt pavement application. Such odors would disperse rapidly from the Project site and generally occur at magnitudes that would not affect substantial numbers of people. Therefore, impacts associated with odors during construction would be **less than significant**.

Land uses and industrial operations associated with odor complaints include agricultural uses, wastewater treatment plants, food-processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding (SCAQMD 1993). The Project includes residential and commercial uses, as well as an on-site community farm that is approximately 1 acre in size. The community farm, which would be professionally managed, would be considered a land use that is commonly associated with odors due to the presence of fertilizers, pesticides, and herbicides. The community farm would be located within the Village Center as the farthest amenity from planned and existing residents, providing a buffer from any potential odors. However, as discussed in Section 2.5, Hazards and Hazardous Materials, of this EIR, the Project would incorporate an Agriculture Operations Plan as part of the Specific Plan, which would guide the use of community-farm-related materials. Performance standards for agricultural operations at the community farm would be included as part of the Agricultural Operations Plan to ensure that objectionable odors would not be generated during community farm operations. Therefore, Project operations would result in an odor impact that would be **less than significant**.

2.1.3 Cumulative Impact Analysis

In analyzing cumulative impacts from a project, the analysis must specifically evaluate a project's contribution to the cumulative increase in pollutants for which the SDAB is listed as nonattainment for the state and federal ambient air quality standards. The project would have a cumulatively considerable impact if project-generated emissions would exceed thresholds for PM_{10}, $PM_{2.5}$, NO_x, and/or VOCs. If the project does not exceed thresholds and is determined to have less than significant project-specific impacts, it may still have a cumulatively considerable impact on air quality if the emissions from the project, in combination with the emissions from other proposed or reasonably foreseeable future projects, are in excess of established thresholds. However, the project would be considered to have a cumulative impact only if the project's contribution accounts for a significant proportion of the cumulative total emissions.

Background ambient air quality, as measured at the monitoring stations maintained and operated by SDAPCD, measures the concentrations of pollutants from existing sources; therefore, impacts from other past and present projects are included in the background ambient air quality data.

Geographic Extent

The geographic extent for the analysis of cumulative impacts related to air quality includes the northeastern corner of the SDAB (San Diego County). However, localized cumulative effects may occur from fugitive dust, CO, and NO_x. Due to the nonattainment status of the SDAB, the primary air pollutants of concern would be NO_x and VOCs, which are O_3 precursors, and PM_{10} and $PM_{2.5}$. NO_x and VOCs are primarily emitted from motor vehicles and construction equipment, while PM_{10} and $PM_{2.5}$ are emitted primarily as fugitive dust during construction. Because of the nature of ozone as a regional air pollutant, emissions from the entire geographic area for this cumulative impact analysis would tend to be important, although maximum ozone impacts generally occur downwind of the area in which the ozone precursors are released. PM_{10} and $PM_{2.5}$ impacts, on the other hand, would tend to occur locally; thus, projects occurring in the same general area and in the same time period would tend to create cumulative air quality impacts.

Existing Cumulative Conditions

Air quality management in the geographic area for the cumulative impact assessment is the responsibility of SDAPCD. Existing levels of development in San Diego County have led to the nonattainment status for ozone with respect to the CAAQS and NAAQS, and for PM_{10} and $PM_{2.5}$ with respect to the CAAQS. The nonattainment status is based on ambient air quality monitoring generally conducted in the urban portions of the County. No monitoring stations exist in the geographic area for the cumulative impact assessment, but air quality would generally be better than that in the urban areas in the western portion of the County due to the lack of major air pollutant sources. The air quality plans prepared by SDAPCD reflect future growth under local development plans but are intended to reduce emissions countywide to levels that would comply with the NAAQS and CAAQS through implementation of new regulations at the federal, state, and local levels.

Cumulative Analysis

Cumulatively Considerable Net Increase of Criteria Pollutants (Construction)

Air pollution is largely a cumulative impact. The nonattainment status of regional pollutants is a result of past and present development, and SDAPCD develops and implements plans for future attainment of ambient air quality standards. Based on these considerations, project-level thresholds of significance for criteria pollutants are relevant in the determination of whether a project's individual emissions would have a cumulatively significant impact on air quality. Additionally, for the basin, the RAQS serves as the long-term regional air quality planning document for the purpose of assessing cumulative operational emissions in the basin to ensure the SDAB continues to make progress toward NAAQS- and CAAQS-attainment status. As such, cumulative projects located in the San Diego region would have the potential to result in a cumulative impact to air quality if, in combination, they would conflict with or obstruct implementation of the RAQS. Similarly, individual projects that are inconsistent with the regional planning documents upon which the RAQS is based would have the potential to result in cumulative operational impacts if they represent development and population increases beyond regional projections.

The SDAB has been designated as a federal nonattainment area for O_3 and a state nonattainment area for O_3, PM_{10}, and $PM_{2.5}$. PM_{10} and $PM_{2.5}$ emissions associated with construction generally result in near-field impacts. The nonattainment status is the result of cumulative emissions from all sources of these air pollutants and their precursors within the basin. As discussed previously, the emissions from construction would be above the significance levels prior to mitigation. Construction would be short term and temporary in nature. Once construction is completed, construction-related emissions would cease. As such, the Project would result in a potentially significant cumulative impact to air quality relative to construction emissions.

As such, the Project may conflict with the SDAPCD 2016 RAQS for O_3 or the 2016 O_3 Attainment Plan, which address the cumulative emissions in the SDAB and account for emissions associated with construction activity in the SDAB. Accordingly, the Project may result in a cumulatively considerable increase in emissions of nonattainment pollutants, which would be a **potentially significant** impact (**Impact AQ-CUM-1**).

Cumulatively Considerable Net Increase of Criteria Pollutants (Operation)

Operational emissions generated by the Project would not exceed the significance thresholds for VOCs, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$, and would not cause a significant impact. As such, the Project would result in less than significant cumulative impacts to air quality relative to operational emissions.

As shown in Section 2.1.2.3, Threshold C, under Health Impacts of Other Criteria Air Pollutants, the maximum CO concentration predicted for the 1-hour averaging period at the studied intersections and predicted 8-hour CO concentration would be below the CAAQS. Accordingly, the Project would not cause or contribute to violations of the CAAQS and would not result in exposure of sensitive receptors to localized high concentrations of CO. As such, impacts to sensitive receptors with regard to potential CO hotspots resulting from Project contribution to cumulative traffic-related air quality impacts would be **less than significant**.

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

2.1.4 Significance of Impacts Prior to Mitigation

Based on the analysis in Sections 2.1.2 and 2.1.3, the Project would have the following **potentially significant** impacts prior to mitigation:

Impact AQ-1 The Project's requested zoning change was not included in the current RAQS and the SIP.

Impact AQ-2 Daily construction emissions would exceed the City's significance thresholds for NO_x.

Impact AQ-3 The Project would exceed the City's significance thresholds for NO_x during construction with respect to sensitive receptors.

Impact AQ-CUM-1 The Project would exceed the City's significance thresholds for NO_x during construction. Accordingly, the Project may result in a cumulatively considerable increase in emissions of nonattainment pollutants.

2.1.5 Mitigation

The following mitigation would reduce **Impact AQ-1**, **Impact AQ-2**, **Impact AQ-3**, and **Impact AQ-CUM-1** to a level less than significant:

M-AQ-1 Prior to the San Diego Air Pollution Control District's (SDAPCD's) next triennial review of the Regional Air Quality Strategy, the City of Escondido (City) shall coordinate with SDAPCD to amend the growth assumptions using the Project's Specific Plan. This includes changing the designation of Residential Urban I and R-1-7 to Specific Plan Area and SP Zone within the Project site.

M-AQ-2 Prior to the commencement of grading activities within each phase of development, the City shall confirm that the following measures shall be adhered to during construction activities associated with the Project to reduce oxides of nitrogen (NO_x):

a. For off-road equipment with engines rated at 75 horsepower or greater, no construction equipment shall be used that is less than Tier 3.

   An exemption from these requirements may be granted by the City in the event that the Project applicant (or its designee) documents that:

   1. Equipment with the required tier is not reasonably available (e.g., reasonability factors to be considered include those related to the commercial availability of the necessary equipment within the County of San Diego within the scheduled construction period).
   2. Corresponding reductions in criteria air pollutant emissions are achieved from other construction equipment.

   For example, if a Tier 3 piece of equipment is not reasonably available at the time of construction and a lower tier equipment is used instead (e.g., Tier 2), another piece of utilized equipment could be upgraded from Tier 3 to a higher tier (e.g., Tier 4 Interim or Tier 4 Final) or replaced with an alternative-fueled (not diesel-fueled) equipment to offset the emission reductions associated with using a piece of equipment that does not meet Tier 3 standards. The permissibility to achieve greater emission reductions through the use of cleaner equipment engines to offset assumed emission reductions that are not feasibly achieved ensures that total Project-generated criteria air pollutant emissions from equipment operation are reduced, if an exemption is granted by the City.

b. The engine size of construction equipment shall be the minimum size suitable for the required job.

c. Construction equipment shall be maintained in accordance with the manufacturer's specifications.

2.1.6 Significance of Impacts After Mitigation

The following discussion provides the significance conclusion reached after application of the mitigation measures in each of the above impact analyses, and the level of impact that would result after implementation of the Project with mitigation.

Conformance to Regional Air Quality Strategy (**Impact AQ-1**)

With implementation of **M-AQ-1**, the inconsistency with the current RAQS and SIP associated with the proposed land use designation changes would be rectified, and the proposed project would no longer be inconsistent. Therefore, after mitigation, **Impact AQ-1** would be **less than significant**.

Conformance to Federal and State Ambient Air Quality Standards (**Impact AQ-2**)

Construction

When **M-AQ-2** is implemented, daily construction emissions would not exceed the City's significance thresholds for VOCs, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$ during construction in all construction years (see Table 2.1-15, Estimated Mitigated Maximum Daily Construction Criteria Air Pollutant Emissions). Therefore, construction-generated emissions (**Impact AQ-2**) would be considered **less than significant** with mitigation.

Impacts to Sensitive Receptors (**Impact AQ-3**)

Construction

When **M-AQ-2** is implemented, daily construction emissions would not exceed the City's significance thresholds for VOCs, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$ during construction in all construction years (Table 2.1-15). Impacts to sensitive receptors associated with Project-generated construction criteria air pollutant emissions (**Impact AQ-3**) would be **less than significant** with mitigation.

Cumulatively Considerable Impacts (**Impact AQ-CUM-1**)

Construction

The SDAB is a nonattainment area for O_3 under the NAAQS and CAAQS. The poor air quality in the SDAB is the result of cumulative emissions from motor vehicles, off-road equipment, commercial and industrial facilities, and other emission sources. Projects that emit these pollutants or their precursors (i.e., VOCs and NO_x for O_3) potentially contribute to poor air quality. As indicated in Table 2.1-15, daily construction emissions would not exceed the City's significance thresholds with implementation of **M-AQ-2**. As such, the Project would not conflict with the SDAPCD 2016 RAQS for O_3 or the 2016 O_3 Attainment Plan, which address the cumulative emissions in the SDAB and account for emissions associated with construction activity in the SDAB. Accordingly, the Project would not result in a cumulatively considerable increase in emissions of nonattainment pollutants. **Impact AQ-CUM-1** would be **less than significant** with mitigation.

Table 2.1-1
SDAB Attainment Classification

Pollutant	Federal Designation	State Designation
O_3 (1-hour)	Attainment[a]	**Nonattainment**
O_3 (8-hour – 1997) (8-hour – 2008)	Attainment (maintenance) **Nonattainment (moderate)**	**Nonattainment**
NO_2	Unclassifiable/attainment	Attainment
CO	Attainment (maintenance)	Attainment
SO_2	Not designated[b]	Attainment
PM_{10}	Unclassifiable/attainment	**Nonattainment**
$PM_{2.5}$	Unclassifiable/attainment	**Nonattainment**
Lead	Unclassifiable/attainment	Attainment
Sulfates	No federal standard	Attainment
Hydrogen sulfide	No federal standard	Unclassified
Visibility-reducing particles	No federal standard	Unclassified
Vinyl chloride	No federal standard	No designation

Sources: [a] EPA 2016b; [b] CARB 2016c
Notes: SDAB = San Diego Air Basin; O_3 = ozone; NO_2 = nitrogen dioxide; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter.
Attainment = meets the standards; Attainment/Maintenance = achieve the standards after a nonattainment designation; Nonattainment = does not meet the standards; Unclassified or Unclassifiable = insufficient data to classify; Unclassifiable/Attainment = meets the standard or is expected to be meet the standard despite a lack of monitoring data.
Bold text shows nonattainment designations.
[a] The federal 1-hour standard of 0.12 parts per million was in effect from 1979 through June 15, 2005. The revoked standard is referenced here because it was employed for such a long period and because this benchmark is addressed in SIPs.
[b] Federal designations for SO_2 are on hold by EPA; EPA expects to make the designations by December 2017 (EPA 2016d).

Table 2.1-2
Local Ambient Air Quality Data

Averaging Time	Unit	Agency/ Method	Ambient Air Quality Standard	Measured Concentration by Year			Exceedances by Year		
				2013	2014	2015	2013	2014	2015
Ozone – Escondido									
Maximum 1-hour concentration	ppm	State	0.09	0.084	0.099	0.079	0	1	0
Maximum 8-hour concentration	ppm	State	0.070	0.075	0.080	0.071	4	8	3
		Federal	0.070	0.074	0.079	0.071	4	7	2
Nitrogen Dioxide – Escondido									
Maximum 1-hour concentration	ppm	State	0.18	0.061	0.063	0.048	0	0	0
		Federal	0.100	0.061	0.063	0.048	0	0	0
Annual concentration	ppm	State	0.030	0.013	0.011	ND	—	—	—
		Federal	0.053	0.012	0.011	ND	—	—	—
Carbon Monoxide – Escondido									
Maximum 1-hour concentration	ppm	State	20	3.2	3.8	3.1	0	0	0
		Federal	35	3.2	3.8	3.1	0	0	0
Maximum 8-hour concentration	ppm	State	9.0	2.6	3.1	2.0	0	0	0
		Federal	9	2.6	3.1	2.0	0	0	0
Sulfur Dioxide – El Cajon									
Maximum 1-hour concentration	ppm	Federal	0.075	0.0065	0.001	0.0012	0	0	0
Maximum 24-hour concentration	ppm	Federal	0.14	0.0006	0.003	0.004	0	0	0
Annual concentration	ppm	Federal	0.030	0.00014	0.00014	0.00011	—	—	—
Coarse Particulate Matter[a] – Escondido									
Maximum 24-hour concentration	μg/m³	State	50	82.0	44.0	31.0	6.0 (1)	0.0 (0)	— (0)
		Federal	150	80.0	43.0	30.0	0.0 (0)	0.0 (0)	— (0)
Annual concentration	μg/m³	State	20	23.1	21.5	ND	—	—	—
Fine Particulate Matter[a] – Escondido									
Maximum 24-hour concentration	μg/m³	Federal	35	56.3	77.5	29.4	1.1 (1)	1.0 (1)	—
Annual concentration	μg/m³	State	12	10.5	9.6	ND	—	—	—
		Federal	12.0	11.0	9.9	ND	—	—	—

Sources: CARB 2016d; EPA 2016c.

Notes: ppm = parts per million by volume; ND = insufficient data available to determine the value; — = not available; μg/m³ = micrograms per cubic meter.

Data taken from CARB iADAM (http://www.CARB.ca.gov/adam) and EPA AirData (http://www.epa.gov/airdata/) represent the highest concentrations experienced over a given year.

Daily exceedances for particulate matter are estimated days because PM_{10} and $PM_{2.5}$ are not monitored daily. All other criteria pollutants did not exceed federal or state standards during the years shown. There is no federal standard for 1-hour ozone, annual PM_{10}, or 24-hour SO_2, nor is there a state 24-hour standard for $PM_{2.5}$. The Escondido monitoring station is located at 600 East Valley Parkway, Escondido, California.

The El Cajon monitoring station is located at 10537 Floyd Smith Drive, El Cajon, California.

[a] Measurements of PM_{10} and $PM_{2.5}$ are usually collected every 6 days and every 1 to 3 days, respectively. Number of days exceeding the standards is a mathematical estimate of the number of days concentrations would have been greater than the level of the standard had each day been monitored. The numbers in parentheses are the measured number of samples that exceeded the standard.

Table 2.1-3
Ambient Air Quality Standards

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

Source: CARB 2016b.

Notes: O_3 = ozone; ppm = parts per million by volume; μg/m^3 = micrograms per cubic meter; NO_2 = nitrogen dioxide; CO = carbon monoxide; mg/m^3= milligrams per cubic meter; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; SO_2 = sulfur dioxide.

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

[b] National standards (other than O_3, NO_2, SO_2, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once per year. The O_3 standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected

number of days per calendar year with a 24-hour average concentration above 150 μg/m^3 is equal to or less than 1. For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

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

d National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

e National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

f On October 1, 2015, the EPA Administrator signed the notice for the final rule to revise the primary and secondary NAAQS for O_3. The EPA is revising the levels of both standards from 0.075 ppm to 0.070 ppm and retaining their indicators (O_3), forms (fourth-highest daily maximum, averaged across 3 consecutive years) and averaging times (8 hours). The EPA is in the process of submitting the rule for publication in the Federal Register. The final rule will be effective 60 days after the date of publication in the Federal Register. The lowered national 8-hour standards are reflected in the table.

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

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

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

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

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

Table 2.1-4
Construction Phasing Assumptions

Project Construction Phase	Construction Start Month/Year	Construction End Month/Year
Phase 1	*1/2018*	*4/2019*
Demolition	1/2018	3/2018
Grading	3/2018	5/2018
Trenching WU	5/2018	9/2018
Trenching DU	1/2019	3/2019
Surface Improvements	2/2019	4/2019
Phase 2	*5/2018*	*5/2019*
Grading	5/2018	7/2018
Trenching WU	1/2019	4/2019
Import	1/2019	3/2019
Trenching DU	3/2019	4/2019
Surface Improvements	4/2019	5/2019
Phase 3	*10/2018*	*6/2019*
Grading	10/2018	11/2018
Import	3/2019	4/2019

Table 2.1-4
Construction Phasing Assumptions

Project Construction Phase	Construction Start Month/Year	Construction End Month/Year
Trenching WU	4/2019	5/2019
Trenching DU	5/2019	6/2019
Surface Improvements	5/2019	6/2019
Phase 4	*11/2018*	*7/2019*
Grading	11/2018	12/2018
Import	4/2019	6/2019
Trenching WU	5/2019	7/2019
Trenching DU	6/2019	7/2019
Surface Improvements	7/2019	7/2019
Other Project Construction Phases		
Paving – Country Club & El Norte	5/2018	7/2018
Paving – Country Club & Nutmeg	2/2019	4/2019
Building Construction	3/2019	6/2023
Paving – El Norte & Nutmeg	4/2019	6/2019
Architectural Coating	1/2023	6/2023

Notes: DU = dry utilities; WU = wet utilities.

Table 2.1-5
Construction Scenario Assumptions

Construction Phase	One-Way Vehicle Trips			Equipment		
	Average Daily Worker Trips	*Average Daily Vendor Truck Trips*	*Total Haul Truck Trips*	*Equipment Type*	*Quantity*	*Usage Hours*
Demolition – Phase 1	34	0	252	Crawler tractors	1	8
				Off-highway trucks	1	8
				Other construction equipment	5	8
Grading – Phase 1	56	0	0	Graders	2	8
				Off-highway trucks	5	8
				Rubber-tired dozers	3	8
				Scrapers	8	8
Trenching WU – Phase 1	26	0	0	Excavators	2	8
				Off-highway trucks	4	8
				Rubber-tired loaders	4	8
Grading – Phase 2	56	0	0	Graders	2	8
				Off-highway trucks	5	8
				Rubber-tired dozers	2	8
				Rubber-tired loaders	1	8
				Scrapers	8	8

Table 2.1-5
Construction Scenario Assumptions

Construction Phase	One-Way Vehicle Trips			Equipment		
	Average Daily Worker Trips	*Average Daily Vendor Truck Trips*	*Total Haul Truck Trips*	*Equipment Type*	*Quantity*	*Usage Hours*
Paving – Country Club & El Norte	26	0	0	Excavators	1	8
				Graders	1	8
				Off-highway trucks	2	8
				Pavers	1	8
				Rollers	1	8
				Rubber-tired loaders	2	8
Import – Phase 2	18	0	8,813	Graders	1	8
				Rubber-tired dozers	1	8
				Rubber-tired loaders	1	8
Trenching DU – Phase 1	14	0	0	Off-highway trucks	1	8
				Rubber-tired loaders	2	8
				Tractors/loaders/backhoes	2	8
Trenching WU – Phase 2	26	0	0	Excavators	2	8
				Off-highway trucks	4	8
				Rubber-tired loaders	4	8
Grading – Phase 3	56	0	0	Graders	2	8
				Off-highway trucks	5	8
				Rubber-tired dozers	2	8
				Rubber-tired loaders	1	8
				Scrapers	8	8
Surface Improvements – Phase 1	20	4	0	Graders	2	8
				Pavers	1	8
				Paving equipment	1	8
				Rollers	1	8
				Rubber-tired loaders	1	8
				Scrapers	2	8
Paving – Country Club & Nutmeg	26	0	0	Excavators	1	8
				Graders	1	8
				Off-highway trucks	2	8
				Pavers	1	8
				Rollers	1	8
				Rubber-tired loaders	2	8

Table 2.1-5
Construction Scenario Assumptions

Construction Phase	One-Way Vehicle Trips			Equipment		
	Average Daily Worker Trips	*Average Daily Vendor Truck Trips*	*Total Haul Truck Trips*	*Equipment Type*	*Quantity*	*Usage Hours*
Grading – Phase 4	56	0	0	Graders	2	8
				Off-highway trucks	5	8
				Rubber-tired dozers	2	8
				Rubber-tired loaders	1	8
				Scrapers	8	8
Import – Phase 3	18	0	3,563	Graders	1	8
				Rubber-tired dozers	1	8
				Rubber-tired loaders	1	8
Trenching DU – Phase 2	14	0	0	Off-highway trucks	1	8
				Rubber-tired loaders	2	8
				Tractors/loaders/backhoes	2	8
Import – Phase 4	20	0	10,125	Graders	1	8
				Off-highway trucks	1	8
				Rubber-tired dozers	1	8
				Rubber-tired loaders	1	8
Trenching WU – Phase 3	26	0	0	Excavators	2	8
				Off-highway trucks	4	8
				Rubber-tired loaders	4	8
Building Construction	182	54	0	Cranes	1	8
				Forklifts	3	8
				Generator sets	1	8
				Tractors/loaders/backhoes	3	8
				Welders	1	8
Paving – El Norte & Nutmeg	30	0	0	Excavators	1	8
				Graders	1	8
				Off-highway trucks	2	8
				Pavers	1	8
				Rollers	1	8
				Rubber-tired loaders	2	8

Table 2.1-5
Construction Scenario Assumptions

Construction Phase	One-Way Vehicle Trips			Equipment		
	Average Daily Worker Trips	*Average Daily Vendor Truck Trips*	*Total Haul Truck Trips*	*Equipment Type*	*Quantity*	*Usage Hours*
Surface Improvements – Phase 2	24	4	0	Graders	2	8
				Off-highway trucks	1	8
				Pavers	1	8
				Paving equipment	1	8
				Rollers	1	8
				Rubber-tired loaders	1	8
				Scrapers	2	8
Trenching DU – Phase 3	14	0	0	Off-highway trucks	1	8
				Rubber-tired loaders	2	8
				Tractors/loaders/backhoes	2	8
Trenching WU – Phase 4	26	0	0	Excavators	2	8
				Off-highway trucks	4	8
				Rubber-tired loaders	4	8
Surface Improvements – Phase 3	24	4	0	Graders	2	8
				Off-highway trucks	1	8
				Pavers	1	8
				Paving equipment	1	8
				Rollers	1	8
				Rubber-tired loaders	1	8
				Scrapers	2	8
Trenching DU – Phase 4	14	0	0	Off-highway trucks	1	8
				Rubber-tired loaders	2	8
				Tractors/loaders/backhoes	2	8
Surface Improvements – Phase 4	24	4	0	Graders	2	8
				Off-highway trucks	1	8
				Pavers	1	8
				Paving equipment	1	8
				Rollers	1	8
				Rubber-tired loaders	1	8
				Scrapers	2	8
Architectural Coating	36	0	0	Air compressors	1	8

Source: Kruer, pers. comm. 2017.
Notes: DU = dry utilities; WU = wet utilities.
See Appendix 2.1-1 for details.

Table 2.1-6
Blasting Characteristics

Activity	Phase 1	Phase 2	Phase 3	Phase 4
Blasting days	3	8	3	6
Blasted rock (cubic yards)	3,862	45,017	33	7,717
Blasted rock (cubic yards/day)	1,287	5,627	11	1,286
Explosive used (tons/day)	0.6	2.5	0.01	0.6
Area blasted (square feet)	31,908	129,393	1,322	65,132
Area blasted (square feet/day)	10,636	16,174	441	10,855

Source: Kruer, pers. comm. 2017.
Notes: Phase 1 would include Village 1 and the Village Center. Phase 2 would include Village 2. Phase 3 would include the northeast parcel of Village 3, bordered by Country Club Lane, La Brea Street, La Mirada Avenue, and Nutmeg Lane. Phase 4 would include the southwest portion of Village 3, bordered by La Brea Street, Country Club Lane, and Firestone Drive.

Table 2.1-7
Construction Emission Reduction Strategies

Regulatory Compliance Measures
SDAPCD Rule 55: Fugitive Dust – The applicant would perform dust suppression during the grading and surface improvement phases using application of water three times per day.[a]
SDAPCD Rule 67.0.1: Architectural Coatings – The applicant would use architectural coatings in accordance with this rule during construction, assumed to be 100 g/L for exterior applications and 50 g/L for interior applications.[b]
Project Design Feature
PDF-AQ-1: The Project would include an on-site speed limit of 15 miles per hour to reduce fugitive dust emissions.

Sources:
[a] SDAPCD 2009b.
[b] SDAPCD 2015a.

Table 2.1-8
Operational Emission Reduction Strategies

Regulatory Compliance Measure
SDAPCD Rule 67.0.1: Architectural Coatings – The applicant would use architectural coatings in accordance with this rule during construction, assumed to be 100 g/L for exterior applications and 50 g/L for interior applications.[a]
Project Design Features
PDF-AQ-2: Exceed 2016 Title 24 building energy efficiency standards by 15%. Additionally, the Project will include electricity-saving features, such as an increase in energy efficiency above the 2016 Title 24 standards and solar photovoltaic systems that satisfy 70% of the electricity demand for residential buildings and 50% of the electricity demand for the Village Center.
PDF-AQ-3: Traffic-calming measures for all new streets and existing affected streets and intersections.[b]
PDF-AQ-4: Improve the pedestrian network of the community by constructing an integrated walking and bicycling trail that would connect the villages with the Village Center and adjacent community.[c]

Sources:
[a] SDAPCD 2015a.
[b] New Urban West Inc. 2017, p. 4.
[c] New Urban West Inc. 2017, p. 1.

Table 2.1-9
City of Escondido Daily Emission Screening Level Criteria

Construction Emissions	
Pollutant	*Total Emissions (Pounds per Day)*
Volatile organic compounds (VOCs)	75
Oxides of nitrogen (NO_x)	250
Carbon monoxide (CO)	550
Oxides of sulfur (SO_x)	250
Coarse particulate matter (PM_{10})	100
Fine particulate matter ($PM_{2.5}$)	55
Operational Emissions	
Pollutant	*Total Emissions (Pounds per Day)*
Volatile organic compounds (VOCs)	55
Oxides of nitrogen (NO_x)	250
Carbon monoxide (CO)	550
Oxides of sulfur (SO_x)	250
Coarse particulate matter (PM_{10})	100
Fine particulate matter ($PM_{2.5}$)	55

Source: City of Escondido 2015.

Table 2.1-10
Estimated Maximum Daily Unmitigated Construction Criteria Air Pollutant Emissions

Year	VOCs	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Pounds per Day					
2018	35.00	430.16	354.41	5.39	51.82	21.85
2019	36.60	354.22	190.31	0.62	34.24	19.79
2020	3.22	27.24	24.55	0.06	3.10	1.66
2021	2.91	24.69	23.77	0.06	2.91	1.49
2022	2.65	22.36	23.13	0.06	2.75	1.33
2023	67.70	21.71	25.73	0.06	3.02	1.39
Maximum Daily Emissions	**67.70**	**430.16**	**354.41**	**5.39**	**51.82**	**21.85**
City Threshold	*75*	*250*	*550*	*250*	*100*	*55*
Threshold Exceeded?	No	**Yes**	No	No	No	No

Notes: VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter.
See Appendix 2.1-1 for complete results.

Table 2.1-11
Estimated Maximum Daily Operational Criteria Air Pollutant Emissions

Emission Source	VOCs	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Pounds per Day					
Area	23.29	6.88	35.15	0.04	0.71	0.71

Table 2.1-11
Estimated Maximum Daily Operational Criteria Air Pollutant Emissions

Emission Source	VOCs	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Energy	0.24	2.02	0.94	0.01	0.16	0.16
Mobile	6.34	24.46	73.58	0.26	24.51	6.69
Total	**29.87**	**33.36**	**109.67**	**0.31**	**25.38**	**7.55**
City Threshold	*55*	*250*	*550*	*250*	*100*	*55*
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Notes: VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter.
See Appendix 2.1-1 for complete results.
The values shown are the maximum summer or winter daily emissions results from CalEEMod. These emissions reflect CalEEMod "mitigated" output, which accounts for compliance with SDAPCD Rule 55 (Fugitive Dust) and Rule 67.0.1 (Architectural Coatings).

Table 2.1-12
AERMOD Principal Parameters

Parameter	Details
Meteorological Data	AERMOD-specific meteorological data from SDAPCD's Escondido monitoring station for a 3-year (2010 through 2012) was obtained from the SDAPCD in a preprocessed format suitable for use in AERMOD.
Urban versus Rural Option	Urban dispersion option was utilized due to the residentially developed nature of the project area.
On-site Buildings	No buildings were included for this construction scenario as area sources were conservatively assessed.
Terrain Characteristics	The terrain in the immediate vicinity of the project site is generally variable (flat and elevated) with hills to the north. The elevation of the site ranges from 220 to 275 meters above sea level. Construction area sources were modeled at ground level.
Elevation Data	Digital elevation data were imported into AERMOD and elevations were assigned to the emission sources and receptors. Digital elevation data were obtained through AERMOD View in the United States Geological Survey's National Elevation Dataset format with a 7.5 minute resolution.
Emission Sources and Release Characterizations	The construction area was divided into segmentations best representing location of maximum exposure. An initial vertical dimension of 1.2 meters and release height of 5 meters was used in accordance with EPA's guidance. This initial vertical dimension is appropriate for an elevated source not on or adjacent to a building or structure.

Note: See Appendix B of Appendix 2.1-1.

Table 2.1-13
Construction Activity Health Risk Assessment Results

Impact Parameter	Units	Project Impact	CEQA Threshold	Level of Significance
Maximum Individual Cancer Risk—Residential	Per Million	8.43	10	Less than Significant
Maximum Individual Cancer Risk—Worker	Per Million	0.80	10	Less than Significant
Maximum Individual Cancer Risk—Sensitive Receptor (Schools)	Per Million	0.33	10	Less than Significant
Maximum Chronic Hazard Index	Not Applicable	0.003	1.0	Less than Significant

Source: SDAPCD 2015b.
Notes: CEQA = California Environmental Quality Act; HRA = Health Risk Assessment

Table 2.1-14
CALINE4 Predicted Carbon Monoxide Concentrations

Intersection	Maximum Modeled Impact (ppm)	
	1-hour	*8-hour*[a]
Country Club Lane and Golden Circle Drive 2023	3.4	2.39
Country Club Lane and Golden Circle Drive 2035	3.4	2.39
Country Club Lane and Nutmeg Street 2023	3.5	2.46
Country Club Lane and Nutmeg Street 2035	3.5	2.46
El Norte Parkway and Nutmeg Street and Nordahl Road 2023	3.6	2.53
El Norte Parkway and Nutmeg Street and Nordahl Road 2035	3.6	2.53

Source: Caltrans 1998a (CALINE4).
Notes: ppm = parts per million.
[a] 8-hour concentrations were obtained by multiplying the 1-hour concentration by a persistence factor of 0.70 (SCAQMD 1993).

Table 2.1-15
Estimated Mitigated Maximum Daily Construction Criteria Air Pollutant Emissions

Year	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Pounds per Day					
2018	10.38	112.05	392.40	5.39	25.60	5.25
2019	22.51	160.94	198.34	0.62	17.04	7.43
2020	2.71	21.42	24.74	0.06	2.71	1.31
2021	2.46	19.50	24.01	0.06	2.59	1.19
2022	2.27	17.83	23.44	0.06	2.49	1.10
2023	67.36	17.59	26.07	0.06	2.80	1.20
Maximum Daily Emissions	**67.36**	**160.94**	**392.40**	**5.39**	**25.60**	**7.43**
City Threshold	*75*	*250*	*550*	*250*	*100*	*55*
Threshold Exceeded?	No	No	No	No	No	No

Notes: VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter.
See Appendix 2.1-1 for complete results.
The values shown are the maximum summer or winter daily emissions results from CalEEMod. These emissions reflect CalEEMod "mitigated" output, which accounts for compliance with SDAPCD Rule 55 (Fugitive Dust) and Rule 67.0.1 (Architectural Coatings).