

## 2.2. Air Quality

This section addresses potential air quality impacts that may result from construction and/or operation of the Safari Highlands Ranch (SHR) project. The following discussion addresses the existing air quality conditions in the project area, identifies applicable regulations, evaluates the SHR project’s consistency with applicable goals and policies, identifies and analyzes environmental impacts, and recommends measures to reduce or avoid adverse impacts anticipated from implementation of the project, as applicable.

The analysis in this section is based on measurements and data collected and prepared by Michael Baker International (2016) included in their entirety in **Appendix 2.2**.

The table below summarizes the air quality impacts detailed in **Section 2.2.4**.

### Summary of Air Quality Impacts

Threshold Number	Issue	Determination	Mitigation Measures	Impact After Mitigation
1	Air Quality Plans	Potentially Significant Impact	AIR-1 and AIR-2	Significant and Unavoidable Impact
2	Air Quality Violations	Potentially Significant Impact	AIR-1 through AIR-3	Significant and Unavoidable Impact
3	Sensitive Receptors	Less than Significant Impact	None required	Less than Significant Impact
4	Objectionable Odors	Less than Significant Impact	None required	Less than Significant Impact

### 2.2.1. Existing Conditions

Air quality and dispersion of air pollution in an area is determined by such natural factors as topography, meteorology, and climate, coupled with atmospheric stability. The factors affecting the dispersion of air pollution with respect to the air basin are discussed below.

#### Topography

The topography in the San Diego Air Basin (SDAB) varies greatly, from beaches on the west to mountains and desert on the east. Much of the topography in between consists of mesa tops intersected by canyon areas. The region’s topography influences air flow and the dispersal and movement of pollutants in the basin. The mountains to the east prevent air flow mixing and prohibit dispersal of pollutants in that direction.

#### Meteorology and Climate

Regional climate and local meteorological conditions influence ambient air quality. The climate of the SDAB is dominated by a semi-permanent high pressure cell located over the Pacific Ocean. This cell, called the Pacific High Pressure Cell (or Zone) influences the direction of prevailing winds (westerly to northwesterly) and maintains clear skies for much of the year. In Escondido, the normal daily maximum temperature is 87 degrees Fahrenheit (°F) in July, and the normal daily minimum temperature is 39°F in December, according to the Western

Regional Climate Center (Escondido 2012a). The normal precipitation in Escondido is about 16 inches annually, occurring primarily from November through March.

The high pressure cell also creates two types of temperature inversions that may act to degrade local air quality. Subsidence inversions occur during the warmer months as descending air associated with the Pacific High Pressure Cell comes into contact with cool marine air. The boundary between the two layers of air creates a temperature inversion that traps pollutants. The other type of inversion, a radiation inversion, develops on winter nights when air near the ground cools through radiation and the air aloft remains warm. The shallow inversion layer formed between these two air masses can also trap pollutants.

In addition, ambient air quality in the SDAB is affected by air quality in the South Coast Air Basin (the metropolitan areas of Los Angeles, Orange, San Bernardino, and Riverside counties). Air pollutants, specifically the components of smog, are transported to San Diego County during relatively mild Santa Ana weather conditions. Winds blowing toward the southwest transport the polluted air from the South Coast Air Basin over the ocean. The sea breeze brings this air onshore into San Diego County. When the transported smog is at ground level, the highest ozone concentrations are measured at coastal and near-coastal monitoring sites. However, when the blown-in smog cloud is elevated, coastal sites may be passed over, and the transported ozone is measured farther inland such as in the city (Escondido 2012a).

### **Sensitive Receptors**

Sensitive receptors are more susceptible to the effects of air pollution than is the general population. Sensitive populations (sensitive receptors) that are in proximity to localized sources of toxics and CO are of particular concern. Land uses considered sensitive receptors include residences, schools, playgrounds, childcare centers, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. The nearest sensitive receptors are residences and schools located to the west of the proposed project area, as well as the San Diego Zoo Safari Park to the south of the project area.

### **Air Pollutants of Concern**

The air pollutants emitted into the ambient air by stationary and mobile sources are regulated by federal and state law. These regulated air pollutants are known as criteria air pollutants and are categorized as primary and secondary pollutants. Primary air pollutants—carbon monoxide (CO), reactive organic gases (ROG), nitrogen oxide (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>), coarse particulate matter (PM<sub>10</sub>) and fine particulate matter (PM<sub>2.5</sub>), lead, and fugitive dust—are those that are emitted directly from sources. Of these, CO, SO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> are criteria pollutants. ROG and NO<sub>x</sub> are criteria pollutant precursors and go on to form secondary criteria pollutants through chemical and photochemical reactions in the atmosphere. Ozone (O<sub>3</sub>) and nitrogen dioxide (NO<sub>2</sub>) are the principal secondary pollutants. Presented in **Table 2.2-1** is a description of each of the primary and secondary criteria air pollutants and their known health effects.

**Table 2.2-1 Criteria Air Pollutants Summary of Common Sources and Effects**

Pollutant	Major Man-Made Sources	Human Health Effects
Carbon Monoxide (CO)	An odorless, colorless gas formed when carbon in fuel is not burned completely; a component of motor vehicle exhaust.	Reduces the ability of blood to deliver oxygen to vital tissues, affecting the cardiovascular and nervous system. Impairs vision, causes dizziness, and can lead to unconsciousness or death.
Nitrogen Dioxide (NO <sub>2</sub> )	A reddish-brown gas formed during fuel combustion for motor vehicles and industrial sources. Sources include motor vehicles, electric utilities, and other sources that burn fuel.	Respiratory irritant; aggravates lung and heart problems. Precursor to ozone. Contributes to global warming and nutrient overloading which deteriorates water quality. Causes brown discoloration of the atmosphere.
Ozone (O <sub>3</sub> )	Formed by a chemical reaction between reactive organic gases (ROGs) and nitrous oxides (NO <sub>x</sub> ) in the presence of sunlight. Common sources of these precursor pollutants include motor vehicle exhaust, industrial emissions, gasoline storage and transport, solvents, paints, and landfills.	Irritates and causes inflammation of the mucous membranes and lung airways; causes wheezing, coughing, and pain when inhaling deeply; decreases lung capacity; aggravates lung and heart problems. Damages plants; reduces crop yield.
Particulate Matter (PM <sub>10</sub> & PM <sub>2.5</sub> )	Produced by power plants, chemical plants, unpaved roads and parking lots, wood-burning stoves and fireplaces, automobiles and others.	Increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing; asthma; chronic bronchitis; irregular heartbeat; nonfatal heart attacks; and premature death in people with heart or lung disease. Impairs visibility.
Sulfur Dioxide (SO <sub>2</sub> )	A colorless gas formed when fuel containing sulfur is burned and when gasoline is extracted from oil. Examples are petroleum refineries, cement manufacturing, metal processing facilities, locomotives, and ships.	Respiratory irritant. Aggravates lung and heart problems. In the presence of moisture and oxygen, sulfur dioxide converts to sulfuric acid which can damage marble, iron and steel. Damages crops and natural vegetation. Impairs visibility. Precursor to acid rain.
Lead	Metallic element emitted from metal refineries, smelters, battery manufacturers, iron and steel producers, use of leaded fuels by racing and aircraft industries.	Anemia, high blood pressure, brain and kidney damage, neurological disorders, cancer, lowered IQ. Affects animals, plants, and aquatic ecosystems.

Source: California Air Pollution Control Officers Association (CAPCOA) 2011

### Ambient Air Quality

The San Diego Air Pollution Control District (SDAPCD) operates a network of ambient air monitoring stations throughout San Diego County. The monitoring stations continuously measure ambient concentrations of air pollutants and determine whether the ambient air quality meets the national ambient air quality standards (NAAQS) and the California ambient air quality standards (CAAQS). These measurements are used to help forecast daily air pollution levels. **Table 2.2-2** summarizes the published data since 2013 from the Escondido-East Valley Parkway air quality monitoring station for each year that monitoring data is available.

**Table 2.2-2 Summary of Ambient Air Quality Data**

Pollutant Standards	2013	2014	2015
<b>Ozone</b>			
Max 1-hour concentration (ppm)	0.084	0.099	0.079
Max 8-hour concentration (ppm) (state/federal)	0.075 / 0.074	0.080 / 0.079	0.071 / 0.071
Number of days above state 1-hour standard	0	1	0
Number of days above state/federal 8-hour standard	4 / 0	8 / 5	3 / 0
<b>Respirable Particulate Matter (PM<sub>10</sub>)</b>			
Max 24-hour concentration (µg/m <sup>3</sup> ) (state/federal)	82.0 / 80.0	44.0 / 43.0	31.0 / 30.0
Number of days above state/federal standard	6.0 / 0	0 / 0	* / *
<b>Fine Particulate Matter (PM<sub>2.5</sub>)</b>			
Max 24-hour concentration (µg/m <sup>3</sup> ) (state/federal)	56.3 / 56.3	82.3 / 77.5	62.5 / 29.4
Number of days above federal standard	1.1	1.0	*

Source: CARB 2016

Notes: µg/m<sup>3</sup> = micrograms per cubic meter; ppm = parts per million

\* = No data is currently available from CARB to determine the value.

The attainment status for the SDAB is included in **Table 2.2-3**. Areas that meet ambient air quality standards are classified as attainment areas, while areas that do not meet these standards are classified as nonattainment areas. Areas for which there is insufficient data available are designated unclassified. San Diego County is designated as a nonattainment area for the federal ozone standard and is also a nonattainment area for the state standards for ozone, PM<sub>10</sub>, and PM<sub>2.5</sub> (CARB 2015).

**Table 2.2-3 Federal and State Ambient Air Quality Attainment Status for the SDAB**

Pollutant	Federal	State
Ozone (O <sub>3</sub> )	Nonattainment	Nonattainment
Coarse Particulate Matter (PM <sub>10</sub> )	Unclassified	Nonattainment
Fine Particulate Matter (PM <sub>2.5</sub> )	Unclassified/Attainment	Nonattainment
Carbon Monoxide (CO)	Unclassified/Attainment	Attainment
Nitrogen Dioxide (NO <sub>2</sub> )	Unclassified/Attainment	Attainment
Sulfur Dioxide (SO <sub>2</sub> )	Attainment	Attainment

Source: CARB 2015

### Toxic Air Contaminants

In addition to the criteria pollutants discussed above, toxic air contaminants (TACs) are another group of pollutants of concern. TACs are considered either carcinogenic or noncarcinogenic based on the nature of the health effects associated with exposure to the pollutant. For regulatory purposes, carcinogenic TACs are assumed to have no safe threshold below which health impacts would not occur, and cancer risk is expressed as excess cancer

cases per one million exposed individuals. Noncarcinogenic TACs differ in that there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis.

There are many different types of TACs, with varying degrees of toxicity. Sources of TACs include industrial processes, such as petroleum refining; commercial operations, such as gasoline stations and dry cleaners; and motor vehicle exhaust. Public exposure to TACs can result from emissions from normal operations, as well as from accidental releases of hazardous materials during upset conditions. The health effects associated with TACs are quite diverse and generally are assessed locally rather than regionally.

To date, the California Air Resources Board (CARB) has designated nearly 200 compounds as TACs. Additionally, CARB has implemented control measures for a number of compounds that pose high risks and show potential for effective control. The majority of the estimated health risks from TACs can be attributed to a relatively few compounds.

Most recently, CARB identified diesel particulate matter (diesel PM) as a toxic air contaminant. Diesel PM differs from other TACs in that it is not a single substance but rather a complex mixture of hundreds of substances. Diesel exhaust is a complex mixture of particles and gases produced when an engine burns diesel fuel. Diesel PM is a concern because it causes lung cancer; many compounds found in diesel exhaust are carcinogenic. Diesel PM includes the particle-phase constituents in diesel exhaust. The chemical composition and particle sizes of diesel PM vary between different engine types, engine operating conditions, fuel formulations, and the year of the engine. Short-term (acute) effects of diesel exhaust include eye, nose, throat, and lung irritation, and diesel exhaust can cause coughs, headaches, light-headedness, and nausea. Diesel PM poses the greatest health risk among the TACs; due to their extremely small size, these particles can be inhaled and eventually trapped in the lungs' bronchial and alveolar regions.

There are available measures that can be employed to reduce the risk impacts of heavy trucks. In 1984, as a result of public concern for exposure to airborne carcinogens, CARB adopted regulations to reduce the amount of air toxic contaminant emissions resulting from mobile sources, such as trucks. According to CARB, between 1990 and 2012, ambient concentration and emission trends for diesel particulate matter declined significantly. The decline was attributed to various regulations CARB implemented to address cancer risk. For instance, in 2000 CARB's Diesel Risk Reduction Plan recommended the replacement and retrofit of diesel-fueled engines and the use of ultra-low-sulfur (less than 15 parts per million [ppm]) diesel fuel. As a result of these measures, diesel PM concentrations declined 68 percent, even though the state's population increased 31 percent and the amount of diesel vehicles miles traveled increased 81 percent. With the implementation of these diesel-related control regulations, CARB expects a decline in diesel particulate matter of 71 percent for 2000–2020.

## 2.2.2. Regulatory Framework

### Federal

#### Clean Air Act

The Clean Air Act (CAA) of 1970 and the CAA Amendments of 1971 required the US Environmental Protection Agency (EPA) to establish NAAQS, with states retaining the option to adopt more stringent standards or to include other specific pollutants. On April 2, 2007, the Supreme Court found that carbon dioxide is an air pollutant covered by the CAA; however, no NAAQS have been established for carbon dioxide.

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

The EPA has classified air basins (or portions thereof) as being in attainment, nonattainment, or unclassified for each criteria air pollutant, based on whether or not the NAAQS have been achieved. If an area is designated unclassified, it is because inadequate air quality data were available as a basis for a nonattainment or attainment designation. **Table 2.2-3** lists the federal attainment status of the SDAB for the criteria pollutants.

#### National Emissions Standards for Hazardous Air Pollutants Program

Under federal law, 188 substances are listed as hazardous air pollutants (HAPs). Major sources of specific HAPs are subject to the requirements of the National Emissions Standards for Hazardous Air Pollutants program. The EPA is establishing regulatory schemes for specific source categories and requires implementation of Maximum Achievable Control Technologies for major sources of HAPs in each source category. State law has established the framework for California’s TAC identification and control program, which is generally more stringent than the federal program and is aimed at HAPs that are a problem in California. The State has formally identified more than 200 substances as TACs and is adopting appropriate control measures for each. Once adopted at the state level, each air district will be required to adopt a measure that is equally or more stringent.

### State

#### California Air Toxics “Hot Spots” Information and Assessment Act (AB 2588)

The California Air Toxics “Hot Spots” Information and Assessment Act (Assembly Bill [AB] 2588) is a statewide program enacted in 1987. AB 2588 requires facilities that exceed recommended Office of Environmental Health Hazard Assessment levels to reduce risks to acceptable levels. AB 2588 requires hundreds of facilities in San Diego County to quantify the emissions of TACs, and in some cases conduct a health risk assessment, and notify the public, while developing risk reduction strategies.

Typically, land development projects generate diesel emissions from construction vehicles during the construction phase, as well as some diesel emissions from small trucks during the operational phase. Diesel exhaust is mainly composed of particulate matter and gases, which contain potential cancer-causing substances. Emissions from diesel engines currently include over 40 substances that are listed by the EPA as hazardous air pollutants and by CARB as toxic air contaminants. On August 27, 1998, CARB identified particulate matter in diesel exhaust as a TAC, based on data linking diesel particulate emissions to increased risks of lung cancer and respiratory disease.

In September 2000, CARB adopted a comprehensive diesel risk reduction plan to reduce emissions from both new and existing diesel-fueled engines and vehicles. The goal of the plan is to reduce diesel PM emissions and the associated health risk by 75 percent in 2010 and by 85 percent by 2020. As part of this plan, CARB identified Airborne Toxic Control Measures (ATCM) for mobile and stationary emissions sources. Each ATCM is codified in the California Code of Regulations, including the ATCM to limit diesel-fueled commercial motor vehicle idling, which puts limits on idling time for large diesel engines (13 California Code of Regulations Chapter 10, Section 2485).

### California Clean Air Act

The EPA allows states to adopt different ambient air quality standards and other regulations provided that they are at least as stringent as federal standards. Through the California Clean Air Act, signed into law in 1988, CARB has generally set more aggressive limits on criteria pollutants. CARB, a part of the California Environmental Protection Agency, is responsible for the coordination and administration of both federal and state air pollution control programs in the state, including setting the California ambient air quality standards. CARB also conducts research, compiles emission inventories, develops suggested control measures, and oversees local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. CARB has primary responsibility for the development of California's State Implementation Plan (SIP), for which it works closely with the federal government and the local air districts.

In addition to standards set for the six criteria pollutants, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety. In addition to primary and secondary ambient air quality standards, the State has established a set of episode criteria for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, and particulate matter. These criteria refer to episode levels representing periods of short-term exposure to air pollutants that actually threaten public health. **Table 2.2-3** lists the state attainment status of the SDAB for the criteria pollutants.

### California State Implementation Plan

The federal Clean Air Act (and its subsequent amendments) requires each state to prepare an air quality control plan referred to as the SIP. The SIP is a living document that is periodically modified to reflect the latest emissions inventories, plans, and rules and regulations of air

basins as reported by the agencies with jurisdiction over them. The CAA Amendments dictate that states containing areas violating the national ambient air quality standards revise their SIPs to include extra control measures to reduce air pollution. The SIP includes strategies and control measures to attain the NAAQS by deadlines established by the Clean Air Act. The SDAPCD is responsible for preparing and implementing the portion of the SIP applicable to the San Diego Air Basin. The EPA has the responsibility to review all State Implementation Plans to determine whether they conform to the requirements of the CAA.

The most recent version of the SIP for San Diego County is the Eight-Hour Ozone Attainment Plan, adopted in May 2007, which incorporates plans for attaining and maintaining the 8-hour NAAQS for ozone. This plan accommodates emissions from all sources, including natural sources, through implementation of control measures, where feasible, on stationary sources to attain the standards. Mobile sources are regulated by the EPA and CARB, and the emissions and reduction strategies related to mobile sources are considered in the plan. The SIP does not address impacts from sources of PM<sub>10</sub> or PM<sub>2.5</sub>, although it does include control measures (rules) to regulate stationary source emissions of those pollutants. The original SIP for carbon monoxide, adopted in 1996 and revised in 2004, demonstrates how the SDAB would continue to maintain compliance with federal carbon monoxide standards.

### New Source Review

Federal and state law requires that air districts in nonattainment areas conduct a New Source Review (NSR) prior to permitting or modifying existing “major” sources. The purpose of an NSR is to allow continued industrial growth in nonattainment areas and, at the same time, ensure that new and modified sources do not aggravate existing air quality problems and/or negate emissions reductions from other sources. In the San Diego Air Basin, the SIP requires non-major sources to undergo an NSR. Under a New Source Review, all existing and new stationary sources of emissions are required to conduct a best available control technology (BACT) analysis to evaluate the feasibility of implementing emission control devices. In some instances, new sources have to offset their own emission increases using Emission Reduction Credits. In general, technological feasibility and economic, environmental, and energy issues must be taken into account when determining the applicable appropriate control technology.

### California Health and Safety Code

California Health and Safety Code Section 41700 states that, except as otherwise provided in Section 41705, no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.

Section 41705 states that Section 41700 does not apply to odors emanating from (1) agricultural operations necessary for the growing of crops or the raising of fowl or animals; (2) operations that produce, manufacture, or handle compost if the odors emanate directly from the compost facility or operations; or (3) operations that compost green material or animal waste products derived from agricultural operations, and that return similar amounts of the compost produced to that same agricultural operations source, or to an agricultural

operations source owned or leased by the owner, parent company, or subsidiary conducting the composting operation.

### Senate Bill 1889, Accidental Release Prevention Law/California Accidental Release Prevention Program

Senate Bill (SB) 1889 required the State of California to implement a new federally mandated program governing the accidental airborne release of chemicals promulgated under CAA Section 112. Effective January 1, 1997, the California Accidental Release Prevention (CalARP) program replaced the previous California Risk Management and Prevention Program and incorporated the mandatory federal requirements. CalARP addresses facilities that contain specified hazardous materials, known as regulated substances, which if involved in an accidental release, could result in adverse offsite consequences. The program defines regulated substances as chemicals that pose a threat to public health and safety or the environment because they are highly toxic, flammable, or explosive.

### **Local**

#### San Diego County Regional Air Quality Strategy

The SDAPCD is the local agency responsible for the administration and enforcement of air quality regulations in San Diego County. The air district regulates most air pollutant sources, except for motor vehicles, marine vessels, aircraft, and agricultural equipment, which are regulated by CARB or the EPA. State and local government projects, as well as projects proposed by the private sector, are subject to SDAPCD requirements if the sources are regulated by the district. Additionally, the SDAPCD, along with CARB, maintains and operates ambient air quality monitoring stations at numerous locations throughout San Diego County, including one in Escondido. These stations are used to measure and monitor criteria and toxic air pollutant levels in the ambient air.

The 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 San Diego Air Basin. The San Diego County Regional Air Quality Strategy (RAQS) was initially adopted in 1992 and last updated in 2016. The RAQS outlines the SDAPCD's plans and control measures designed to attain the state air quality standards for ozone. The SDAPCD has also developed input to the State Implementation Plan, which is required under the federal Clean Air Act for pollutants that are designated as being in nonattainment of the NAAQS for the basin.

The Regional Air Quality Strategy relies on information from CARB and SANDAG, including mobile and area source emissions, as well as information regarding projected growth, to project future emissions and establish the strategies necessary for the reduction of emissions through regulatory controls. The RAQS and the SIP used the 2030 Regional Transportation Plan prepared by the San Diego Association of Governments to project future growth in the air basin. As such, projects that propose development that is consistent with the growth anticipated by the Regional Transportation Plan would be consistent with the RAQS. In the event that a project would propose development which is less intensive than anticipated in the RAQS, the project would likewise be consistent with the strategy. If a project proposes development that is greater than that anticipated in the growth projections, the project could

be in conflict with the RAQS and the SIP and could have a potentially significant impact on air quality.

The SIP relies on the same information from SANDAG to develop emissions inventories and emissions reduction strategies that are included in the attainment demonstration for the air basin. The plan also includes rules and regulations that have been adopted by the SDAPCD to control emissions from stationary sources. These SIP-approved rules may be used as a guideline to determine whether a project's emissions would have the potential to conflict with the SIP and thereby hinder attainment of the national ambient air quality standards for ozone.

### SDAPCD Measures to Reduce Particulate Matter in San Diego County

In December 2005, the SDAPCD adopted the Measures to Reduce Particulate Matter in San Diego County. This document identifies fugitive dust as the major source of directly emitted particulate matter in the county, with mobile sources and residential wood combustion as minor contributors. Data on PM<sub>2.5</sub> source apportionment indicates that the main contributors to PM<sub>2.5</sub> in the county are combustion organic carbon, and ammonium sulfate and ammonium nitrate from combustion sources. The main contributors to PM<sub>10</sub> include resuspended soil and road dust from unpaved and paved roads, construction and demolition sites, and mineral extraction and processing. Based on the report's evaluation of control measures recommended by CARB to reduce particulate matter emissions, the SDAPCD adopted Rule 55, the Fugitive Dust Rule, in June 2009. The SDAPCD requires that construction activities implement the measures listed in Rule 55 to minimize fugitive dust emissions. Rule 55 requires the following:

1. No person shall engage in construction or demolition activity in a manner that discharges visible dust emissions into the atmosphere beyond the property line for a period or periods aggregating more than 3 minutes in any 60-minute period.
2. Visible roadway dust as a result of active operations, spillage from transport trucks, erosion, or track-out/carry-out shall be minimized by the use of any of the equally effective track-out/carry-out and erosion control measures listed in Rule 55 that apply to the project or operation. These measures include track-out grates or gravel beds at each egress point; wheel-washing at each egress during muddy conditions; soil binders, chemical soil stabilizers, geotextiles, mulching, or seeding; watering for dust control; and using secured tarps or cargo covering, watering, or treating of transported material for outbound transport trucks. Erosion control measures must be removed at the conclusion of each workday when active operations cease, or every 24 hours for continuous operations.

### Other SDAPCD Rules and Regulations

As discussed above in the discussion of the Regional Air Quality Strategy, state law dictates that local air districts such as the SDAPCD have primary responsibility for controlling emissions from non-mobile (stationary) sources. The stationary source control measures identified in the RAQS and the SIP have been developed by the air district into regulations through a formal rulemaking process. Rules are developed to set limits on the amount of emissions from various types of sources and/or by requiring specific emissions control technologies. Following rule adoption, a permit system is used to impose controls on new and

modified stationary sources and to ensure compliance with regulations by prescribing specific operating conditions or equipment on a source.

SDAPCD Regulation XIV (Title V Operating Permits) contains the requirements for implementing the Title V permit program. The program requires all major sources of criteria air contaminants, all major sources of hazardous air pollutants, all sources that emit more than 100 tons per year of any regulated air contaminant, and certain other specified sources to obtain Title V permits. Permits are issued pursuant to Regulation XIV and incorporate state and local requirements that are contained in existing SDAPCD permits for these sources. Examples of operations that require permits are surface coating operations, adhesive materials application, automotive refinishing operations, dry cleaning operations, fiberglass or plastic product manufacturing, and gas stations.

The SDAPCD also implements New Source Review in the air basin. Prior to the installation of new, modified, relocated, or replacement equipment which results in an increase of air pollution emissions, the SDAPCD requires that the equipment obtain Authority to Construct and be evaluated in accordance with applicable NSR rules. A Permit to Operate from the SDAPCD would be required to authorize operation or use of the equipment. If such equipment would exceed air pollutant thresholds, it must use the BACT to reduce emissions. BACT definitions and requirements are outlined in SDAPCD Rule 20.1, NSR–General Provisions.

It is difficult to ensure that new or modified sources do not interfere with attainment or maintenance of the established air quality standards for ozone. Since ozone is a secondary pollutant (i.e., ozone is not directly emitted, but results from complex chemical reactions in the atmosphere from precursor pollutants), control of the precursors is required. Control of emissions of volatile organic compounds (VOCs) (also known as reactive organic gases or ROG) and nitrogen oxides (NO<sub>x</sub>), the ozone precursors, is essential. The SDAPCD adopted Rule 67, Architectural Coatings, which establishes VOC content limits for architectural coatings, in December 2001.

Additionally, SDAPCD Rule 1210, Toxic Air Contaminant Public Health Risks–Public Notification and Risk Reduction, implements the public notification and risk reduction requirements of the California Air Toxics “Hot Spots” Act (AB 2588) and requires facilities to reduce risks to acceptable levels within five years. Rule 1200, Toxic Air Contaminants–New Source Review, establishes acceptable risk levels and emission control requirements for new and modified facilities that may emit additional TACs. Rule 51, Nuisance, also prohibits nuisances, including objectionable odors.

### City of Escondido Environmental Quality Regulations

The Environmental Quality Regulations (EQR), as established in the City’s Municipal Code Chapter 33, Article 47, implement CEQA and the CEQA Guidelines by applying the provisions and procedures contained in CEQA to development projects proposed in Escondido. The EQRs establish screening thresholds to determine if additional analysis is required to ascertain whether a project would result in significant impacts. Section 33-924(G) pertains to air quality impacts. A project would require a technical study if it would exceed the

thresholds identified in **Table 2.2-4**. However, a project that exceeds these criteria does not necessarily have a significant impact on the environment.

**Table 2.2-4 City of Escondido Daily Emission Screening Level Criteria**

Pollutant	Environmental Quality Ordinance Criteria (pounds/day)
Carbon monoxide	550
Volatile organic compounds	55
Oxides of nitrogen	55
Fine particulate matter	150
Sulfur oxide (SOx)	250

Source: Escondido Municipal Code 2016, Article 47

The City’s General Plan Resource Conservation Element outlines goals and policies to achieve air quality standards. Relevant goals and policies include:

**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 7.1*

Participate in regional planning efforts and coordinate with the San Diego Air Pollution Control District and San Diego Association of Governments in their efforts to reduce air quality impacts and attain state and federal air quality standards.

*Air Quality and Climate Protection Policy 7.2*

Reduce regional greenhouse gas emissions through the following measures including, but not limited to:

- a) Implementing land use patterns that reduce automobile dependence (compact, mixed-use, pedestrian, and transit-oriented development, etc.);
- b) Reducing the number of vehicular miles traveled through implementation of Transportation Demand Management programs, jobs-housing balance, and similar techniques;
- c) Supporting public transportation improvements;
- d) Encouraging the use of alternative modes of transportation by expanding public transit, bicycle, and pedestrian networks and facilities;
- e) Participating in the development of park-and-ride facilities;
- f) Maintaining and updating the city’s traffic signal synchronization plan;
- g) Promoting local agriculture;
- h) Promoting the use of drought-tolerant landscaping; and
- i) Encouraging the use of non-polluting alternative energy systems.

*Air Quality and Climate Protection Policy 7.3*

Require that new development projects incorporate feasible measures that reduce construction and operational emissions.

*Air Quality and Climate Protection Policy 7.4*

Locate uses and facilities/operations that may produce toxic or hazardous air pollutants an adequate distance from each other and from sensitive uses such as housing and schools as consistent with California Air Resources Board recommendations.

*Air Quality and Climate Protection Policy 7.5*

Consider the development of park and ride facilities within the city in coordination with Caltrans.

*Air Quality and Climate Protection Policy 7.6*

Restrict the number and location of drive-through facilities in the city and require site layouts that reduce the amount of time vehicles wait for service.

*Air Quality and Climate Protection Policy 7.7*

Encourage businesses to alter local truck delivery schedules to occur during non-peak hours, when feasible.

*Air Quality and Climate Protection Policy 7.8*

Require that government contractors minimize greenhouse gas emissions in building construction and operations, which can be accomplished through the use of low or zero-emission vehicles and equipment.

*Air Quality and Climate Protection Policy 7.9*

Encourage city employees to use public transit, carpool, and use alternate modes of transportation for their home to work commutes.

*Air Quality and Climate Protection Policy 7.10*

Purchase low-emission vehicles for the city's fleet and use clean fuel sources for trucks and heavy equipment, when feasible.

*Air Quality and Climate Protection Policy 7.11*

Educate the public about air quality, its effect on health, and efforts the public can make to improve air quality and reduce greenhouse gas emissions.

**City of Escondido Climate Action Plan**

The City adopted the Escondido Climate Action Plan (E-CAP) in December 2013 (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 emissions reduction measures are anticipated to achieve air quality co-benefits:

- R2-T1:** Land Use Based Trips and VMT [vehicle miles traveled] Reduction Policies (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 (Escondido 2013, page 4-12): This measure would improve the bicycle network and facilities and reduce VMT.
- R2-T3:** Transit Improvements (Escondido 2013, page 4-13): This measure would expand the public transportation system and reduce VMT.
- R2-T4:** Transportation Demand Management (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 (Escondido 2013, page 4-18): This measure would include installation of solar water heaters to replace natural gas water heaters in new homes.
- R2-E2:** Commercial Energy Efficiency Requirements (Escondido 2013, page 4-19): This measure would include installation of solar water heaters to replace natural gas water heaters in new commercial buildings.
- R2-E3:** Residential Renewable Energy Requirements (Escondido 2013, page 4-20): This measure would include installation of thermal water heaters to replace natural gas water heaters in residential properties.
- R2-E4:** Commercial Renewable Energy Requirements (Escondido 2013, page 4-21): This measure would include installation of thermal water heaters to replace natural gas water heaters in commercial structures.
- R2-E5:** Residential Energy Retrofits (Escondido 2013, page 4-22): This measure would include installation of solar water heaters to replace natural gas water heaters in existing homes.
- R2-E6:** Commercial Energy Retrofits (Escondido 2013, page 4-23): This measure would include installation of solar water heaters to replace natural gas water heaters in existing commercial buildings.
- R1-A2:** Electric Landscaping Equipment (Escondido 2013, page 4-25): This measure would replace combustion landscaping equipment with electric equipment.
- R2-C1:** Construction Emissions Reductions (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.

### 2.2.3. Thresholds for Determination of Significance

City of Escondido Environmental Quality Regulations (Zoning Code Article 47) and Appendix G of the CEQA Guidelines as amended contain analysis guidelines related to the assessment of air quality. A project would result in a significant impact if it would:

1. Conflict with or obstruct implementation of the applicable air quality plan (or applicable air quality thresholds specified in City of Escondido Zoning Code Article 47).
2. Violate any air quality standard or contribute substantially to an existing or projected air quality violation.
3. Expose sensitive receptors to substantial pollutant concentrations.
4. Create objectionable odors affecting a substantial number of people.

### 2.2.4. Analysis of Project Effects and Determination of Significance

***Threshold 1: Would the project conflict with or obstruct implementation of the applicable air quality plan (or applicable air quality thresholds)?***

The project site is located in the San Diego Air Basin and is regulated by the San Diego Air Pollution Control District. The SDAPCD monitors air pollution, implementation of the County's portion of the State Implementation Plan, and application of the district's rules and regulations. The SIP contains strategies and tactics to be applied in order to attain and maintain acceptable air quality in the county, called the Regional Air Quality Strategy. The RAQS is the applicable air quality plan for the proposed project.

Consistency with the RAQS is determined by two standards: (1) whether the proposed project would exceed assumptions contained in the RAQS; and (2) whether the project would increase the frequency or severity of violations of existing air quality standards, contribute to new violations, or delay the timely attainment of air quality standards or interim reductions as contained in the RAQS.

The air quality emission projections and emissions reduction strategies in the RAQS are based on information from the California Air Resources Board and the San Diego Association of Governments regarding mobile and area source emissions, as well as growth in Escondido. CARB mobile source emissions projections and SANDAG growth projections are derived from population and vehicle use trends, and land use plans developed by the cities and the County as part of their general plans. A project that proposes development consistent with the growth anticipated in a general plan would be consistent with the RAQS. Projects that propose development that is greater than the population growth projections and land use intensity of the adopted local general plan warrants further analysis to determine consistency with the RAQS and the SIP.

As discussed under Threshold 2, construction emissions would exceed the SDAPCD thresholds even with the implementation of mitigation measures **MM AIR-1** and **MM AIR-2**. Additionally, long-term operational emissions exceed thresholds. As a result, construction of

the project could potentially result in violations or affect air quality attainment status in the SDAPCD. These impacts would be **significant and unavoidable**.

***Threshold 2: Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?***

### **Short-Term Construction Impacts**

Short-term air quality impacts are anticipated during construction activities associated with implementation of the proposed project. Temporary air emissions would result from the following activities:

- Particulate (fugitive dust) emissions from earth-moving activities
- Exhaust emissions from the grading/construction equipment and the motor vehicles of construction crews

Development of the site would occur in four planned phases. Depending on the market at the time development of each phase is undertaken, construction of the individual phases may overlap so that the available inventory of residential lots is able to meet demands. However, it is anticipated that the project would be phased over an approximate 5-year period. Proposed grading activities would affect approximately 339 acres. Grading activities would be short term and would cease following the completion of construction activities. Mobile source emissions would result from the use of construction equipment such as excavators, dozers, scrapers, tractors, loaders, and backhoes. Emissions for each construction phase have been quantified based on the phase duration and equipment type.

Construction emissions were calculated using the California Emissions Estimator Model (CalEEMod) based on the construction information compiled for the project. Results of the construction emission modeling are shown in **Table 2.2-5**. Emitted pollutants would include volatile organic compounds (VOCs), carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), sulfur dioxide (SO<sub>x</sub>), coarse particulate matter (PM<sub>10</sub>), and fine particulate matter (PM<sub>2.5</sub>). The largest amount of CO and NO<sub>x</sub> emissions would occur during the grading phases of construction. PM<sub>10</sub> and PM<sub>2.5</sub> emissions would occur from fugitive dust (from earthwork and excavation) and from construction equipment exhaust. The majority of particulate matter emissions would be generated by fugitive dust from earthwork activities. Exhaust emissions from grading and construction activities include emissions associated not only with grading activities but with the transport of machinery and supplies to and from the project site, emissions produced on-site as the equipment is used, and emissions from trucks transporting materials to and from the site.

**Table 2.2-5 Daily Construction Emissions – Maximum Pounds per Day (Unmitigated)**

Emissions Source	Pollutant (pounds/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
2019 Emissions	59.87	<b>340.67</b>	211.63	0.48	37.68	16.46
2020 Emissions	<b>179.50</b>	<b>336.16</b>	258.64	0.64	32.50	17.49
2021 Emissions	<b>177.68</b>	130.71	141.12	0.44	26.54	9.74
2022 Emissions	<b>176.38</b>	121.12	135.56	0.43	25.95	9.18
2023 Emissions	<b>131.29</b>	77.44	97.33	0.32	19.09	6.53
<i>SDAPCD Potentially Significant Impact Threshold</i>	75	250	550	250	100	55
<b>Is Threshold Exceeded?</b>	<b>Yes</b>	<b>Yes</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>

Notes:

1. Emissions were calculated using CalEEMod, as recommended by the SDAPCD.
2. Refer to Appendix 2.2 for assumptions used in this analysis.
3. Bold numbers = exceed thresholds

As shown in **Table 2.2-5**, the project’s short-term emissions would exceed SDAPCD thresholds for VOC emissions in 2020, 2021, 2022, and 2023 and NO<sub>x</sub> emissions in 2019 and 2020. The VOC and NO<sub>x</sub> emissions exceedances are predominantly attributed to the use of construction equipment, and the resulting impacts are considered **potentially significant**.

**Mitigation Measures**

**MM AIR-1** All off-road diesel-fueled equipment (e.g., rubber-tired dozers, graders, scrapers, excavators, asphalt paving equipment, cranes, and tractors) associated with project construction shall be at least California Air Resources Board (CARB) Tier 3 Certified or better.

*Timing/Implementation: During construction activities*

*Enforcement/Monitoring: City of Escondido Engineering and Planning Divisions*

**MM AIR-2** The project applicant and/or its contractor shall be responsible for implementation of the following fugitive dust suppression techniques:

- Portions of the construction site to remain inactive longer than a period of three months must be seeded and watered until grass cover is grown or otherwise stabilized in a manner acceptable to the City.
- All on-site roads shall be paved as soon as feasible or watered periodically or chemically stabilized.
- All material transported off-site shall be either sufficiently watered or securely covered to prevent excessive amounts of dust.
- The area disturbed by clearing, grading, earthmoving, or excavation operations shall be minimized at all times.

- Where vehicles leave the construction site and enter adjacent public streets, the streets shall be swept daily or washed down at the end of the work day to remove soil tracked onto the paved surface.
- Installation and utilization of a wheel washing system shall be required to remove bulk material from tires and vehicle undercarriages before vehicles exit the site.

*Timing/Implementation:*      *During construction activities*

*Enforcement/Monitoring:*      *City of Escondido Engineering and Planning Divisions*

**Level of Significance After Mitigation**

Short-term construction emissions accounting for mitigation measures **MM AIR-1** and **MM AIR-2** are summarized in **Table 2.2-6**.

**Table 2.2-6 Daily Construction Emissions – Maximum Pounds per Day (Mitigated)**

Emissions Source	Pollutant (pounds/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
2019 Emissions	59.87	<b>340.67</b>	211.63	0.48	24.25	15.01
2020 Emissions	<b>179.50</b>	<b>336.16</b>	258.64	0.64	29.17	17.13
2021 Emissions	<b>177.68</b>	130.71	141.12	0.44	26.54	9.74
2022 Emissions	<b>176.38</b>	121.12	135.56	0.43	25.95	9.18
2023 Emissions	<b>131.29</b>	77.44	97.33	0.32	19.09	6.53
<i>SDAPCD Potentially Significant Impact Threshold</i>	75	250	550	250	100	55
<b><i>Is Threshold Exceeded After Mitigation?</i></b>	<b>Yes</b>	<b>Yes</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>

Notes:  
 1. Emissions were calculated using CalEEMod, as recommended by the SDAPCD.  
 2. Refer to Appendix 2.2 for assumptions used in this analysis.  
 3. Bold numbers = exceed thresholds.

As shown in **Table 2.2-6**, mitigation measures **MM AIR-1** and **MM AIR-2** would reduce VOC and NO<sub>x</sub> emissions, but not to levels below SDAPCD thresholds for those pollutants. Therefore, impacts would be **significant and unavoidable**.

**Long-Term (Operational) Emissions**

Project operation-generated increases in emissions would be predominantly associated with motor vehicle use. To a lesser extent, area sources, such as the use of natural-gas-fired appliances, landscape maintenance equipment, and architectural coatings (e.g., repainting), would also contribute to overall increases in emissions.

Long-term operational emissions associated with proposed operations are compared to the existing baseline using CalEEMod software in **Table 2.2-7**.

**Table 2.2-7 Long-Term Operational Emissions – Maximum Pounds per Day (Unmitigated)**

Emissions Source	Pollutant (pounds/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Summer Emissions	<b>883.84</b>	61.02	<b>1,229.17</b>	2.49	<b>203.62</b>	<b>161.86</b>
Winter Emissions	<b>883.53</b>	62.46	<b>1,222.81</b>	2.46	<b>203.62</b>	<b>161.87</b>
<i>SDAPCD Potentially Significant Impact Threshold</i>	75	250	550	250	100	55
<b><i>Is Threshold Exceeded?</i></b>	<b>Yes</b>	<b>No</b>	<b>Yes</b>	<b>No</b>	<b>Yes</b>	<b>Yes</b>

Notes:

1. Emissions were calculated using CalEEMod, as recommended by the SDAPCD.
2. Refer to Appendix 2.2 for assumptions used in this analysis.

As shown in **Table 2.2-7**, the project’s long-term operational emissions would exceed SDAPCD thresholds for VOC, CO, PM<sub>10</sub>, and PM<sub>2.5</sub>. The emissions exceedances are predominantly associated with the use of wood-burning hearths/fireplaces, and the resulting impact is **potentially significant**. Implementation of mitigation measure **MM AIR-3** will reduce potentially significant impacts to a less than significant level by limiting the number of residential units with wood-burning fireplaces.

### Mitigation Measures

**MM AIR-3** The installation of wood-burning fireplaces within the project shall be limited to 32 residences; their installation is prohibited in the remaining residences. This prohibition shall be noted on the deeds for future property owners to comply with. Natural gas fireplaces are acceptable within the remaining units prohibited from wood-burning fireplace installation.

*Timing/Implementation:* Plan check phase and inclusion in deeds and homeowners association CC&Rs

*Enforcement/Monitoring:* City of Escondido Engineering and Planning Divisions

### Level of Significance After Mitigation

Long-term operational emissions accounting for mitigation measure **MM AIR-3** are summarized in **Table 2.2-8**.

**Table 2.2-8 Long-Term Operational Emissions – Maximum Pounds per Day (Mitigated)**

Emissions Source	Pollutant (pounds/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Summer Emissions	65.77	51.79	217.18	0.68	61.40	20.07
Winter Emissions	65.46	53.21	210.93	0.66	61.40	20.07
<i>SDAPCD Potentially Significant Impact Threshold</i>	75	250	550	250	100	55
<b><i>Is Threshold Exceeded After Mitigation?</i></b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>

Notes:

1. Emissions were calculated using CalEEMod, as recommended by the SDAPCD.
2. Refer to Appendix 2.2 for assumptions used in this analysis.

As shown in **Table 2.2-8**, the project's emissions would not exceed SDAPCD thresholds for any criteria air pollutants with the implementation of mitigation measure **MM AIR-3**. Specifically, mitigation measure **MM AIR-3** specifies the maximum number (32) of wood-burning fireplaces that can be installed without exceeding the VOC threshold. Therefore, impacts would be **less than significant with mitigation incorporated**.

***Threshold 3: Would the project expose sensitive receptors to substantial pollutant concentrations?***

Sensitive populations are more susceptible to the effects of air pollution than is the general population. Sensitive receptors are defined as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers. CARB has identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over 65, children under 14, athletes, and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis.

Sources of construction-related TACs potentially affecting sensitive receptors include off-road diesel-powered equipment. Construction would result in the generation of diesel PM emissions from the use of off-road diesel equipment required for grading and excavation, paving, and other construction activities. The amount to which the receptors are exposed (a function of concentration and duration of exposure) is the primary factor used to determine health risk (i.e., potential exposure to TAC emission levels that exceed applicable standards). Health-related risks associated with diesel-exhaust emissions are primarily linked to long-term exposure and the associated risk of contracting cancer.

The nearest sensitive receptors to the project site are the predominantly single-family residential neighborhoods located immediately west of the proposed project area (there are schools in these neighborhoods located on Rockwood Road and Bear Valley Parkway). Additionally, the San Diego Zoo Safari Park is located just under a mile to the south of the project area. The use of diesel-powered construction equipment would be temporary and episodic and would occur in several locations isolated from one another. Furthermore, diesel exhaust disperses rapidly over short distances. In order to further avoid potential impacts to residents to the south, the project would be required to implement dust-minimizing construction best management practices during all construction activities (mitigation measure **MM AIR-2**). Construction activities would be short term in nature and would cease upon completion. As noted above in **Table 2.2-6**, particulate matter construction emissions from the proposed project would not exceed SDAPCD thresholds.

In addition to TACs, naturally occurring asbestos, which CARB identified as a toxic air contaminant in 1986, is found in many parts of California and is commonly associated with serpentine. According to a report by the California Department of Conservation, Division of Mines and Geology (2000), the Escondido area is not likely to contain naturally occurring asbestos.

Once operational, the project would not be a source of substantial pollutant concentrations. As such, project impacts would be **less than significant**.

***Threshold 4: Would the project create objectionable odors affecting a substantial number of people?***

Individual responses to odors are highly variable and can result in various effects, including psychological (i.e., irritation, anger, or anxiety) and physiological (i.e., circulatory and respiratory effects, nausea, vomiting, and headache). Generally, the impact of an odor results from a variety of interacting factors such as frequency, duration, offensiveness, location, and sensory perception.

The frequency is a measure of how often an individual is exposed to an odor in the ambient environment. The intensity refers to an individual's or group's perception of the odor strength or concentration. The duration of an odor refers to the elapsed time over which an odor is experienced. The offensiveness of the odor is the subjective rating of the pleasantness or unpleasantness of an odor. The location accounts for the type of area in which a potentially affected person lives, works, or visits; the type of activity they are engaged in; and the sensitivity of the impacted receptor.

CARB's Air Quality and Land Use Handbook (April 2005) identifies the sources of the most common odor complaints received by local air districts. Typical sources include facilities such as sewage treatment plants, landfills, recycling facilities, petroleum refineries, and livestock operations. The project does not contain any of the land uses identified as typically associated with emissions of objectionable odors. As such, project impacts would be **less than significant**.

### 2.2.5. Sources Cited

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